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BOOK

A Novel of the Undeclared War

BOMBS IN ORBIT

JEFF SUTTON

First Book
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MENACE IN THE SKY

Under normal peacetime circumstances, Chris Burke's mission—to command the first man-carrying satellite put into orbit—could lead only to glory or, at the worst, personal defeat. But now the world teetered at the edge of total war. And either he succeeded or there would be no one left in America to call him a failure!

The secret foe had managed to place three mighty BOMBS IN ORBIT. And Chris had to maneuver his *Argus* so as to render those satellite warheads useless. The problem was—which of the bombs were booby-trapped; which were duds? Any error he made would be fatal. Yet to waste time meant to squander the Free World's last chance for survival.

You'll feel every bit of the breath-catching excitement of Chris's doom-laden mission in this authentic thriller from tomorrow's headlines.

Jeff Sutton's background includes journalism, technical writing (specializing in flight safety), human engineering and communications in the aviation and missile industry. This is his second Ace Book; his previous novel was FIRST ON THE MOON (Ace D-327).

He lives with his wife and children in El Cajon, California.

He says of BOMBS IN ORBIT:

"Men are looking skyward: the dawn of manned space flight is near. But it's more than mere curiosity—it's necessity. Men are being trained; hardware is being readied—the Big Nations of the world are in a grim race. The future depends upon the winner; the time is near. BOMBS IN ORBIT centers around this race—the stakes, the men, the vehicles, and the prize."

BOMBS IN ORBIT

by

JEFF SUTTON

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To CHRIS and GALE

Printed in U.S.A.

PROLOGUE

THEY LAUNCHED *Spy Eye* at dawn.

It was a satellite different from all its predecessors—neither slender nor taper-nosed nor graceful; but rather, a squat ugly monster, massive, with its thickest diameter through the base. It was made all the more ungainly by humped booster rockets latched around its broad girth, like so many scabrous leeches clinging to a rhino skin. Crouched behind the blunt nose was the third stage which, in space, would emerge a glistening sphere ringed with snubbed antennas resembling the spokes of a rimless wheel. The sphere contained new and wondrous radar equipment whose wave-trains would literally paint pictures of the terrain over which it passed—measure differences in altitude, detect movement and form, record the geometry of the earth in three dimensions; and on successive crossings above specific points, compare the pictures with previous pictures to record the changing patterns of life on the world far below. The electromagnetic wave-trains would be received, stored, and automatically released in packaged bursts as *Spy Eye* passed over certain points on the earth.

When the glistening sphere was freed of its bulky first and second stages, miniature servo-motors would hum to life, move its recessed antennas into position on its ringed hull; solar-activated energizers would power the equipment, and *Spy Eye* would watch the world—and report.

The incredible rocket had seemed to pause for a split second above its launching pad, belching flame and sickly yellow smoke, before it started upward with a thunderous roar, climbing with increasing speed. Its wake was a fiery clash against the heavens.

The red in the east had paled, etching a low-lying ridge of hills starkly against the sky. The disc of the sun edged above the horizon, washing over the missile complex of Kapustin Yar, just outside Stalingrad. The harsh brittle light moved like a flood over the Caspian depression. The sea to the south of the semi-desert lay slate-gray, moody, the air still. The rocket at that instant was at thirty thousand feet, climbing vertically, accelerating with unbelievable swiftness considering its bulk. It seemed to flee from the place of its captivity.

Seven-hundred miles to the southwest in the lonely Samsun Hills of Turkey a giant saucer caught the rocket as a blip at altitude thirty-five miles. A second saucer in the Elzburg Mountains north of Teheran picked up its passage. They caught the dropping of the first stage, the separation of the second stage, the slant from vertical as it rushed into an orbit inclined sixty-five degrees to the equatorial plane—a road through the skies which would allow it to scan practically every civilized place on the face of the globe while its internal complex of counters, optical and electronic trackers ferreted the secrets of the lands it crossed, telemetering them through an intricate relay fan to a vast subterranean Central Command located in the midst of the Kapustin Yar power web.

Coded messages flowed from Samsun and Elzburg halfway around the world. In a matter of moments they were on the desk of a lieutenant-general, United States Air Force, Missile Security.

CHAPTER I

THE CAMAIR ROARED low over the sea, westerly into a stiff cross-channel wind. Christopher Burke, its lone passenger, twisted his long frame impatiently in the bucket seat alongside the pilot, peering backward in the direction from which they had come. The fast-receding California coastline was a rolling structure against the sky, the harsh lines of its inland mountains softened by haze and distance until no distinguishing landmarks remained.

He brooded a moment, his brown, yellow-flecked eyes fastened on the receding land—he had come over those mountains from Edwards Air Force Base. *Over the mountains and across the sea* . . . the childhood refrain ran through his mind. Across the sea to what? To some lousy island off the coast; Yoland Air Development Center, his orders read. The lack of information elicited by his questions indicated it could be scarcely more than an outpost. Why? He wished he knew. It was all very puzzling.

He turned back restlessly and glanced at the pilot, a stocky taciturn man who wore the insignia of an Air Force major. If the pilot were aware of his scrutiny, he gave no sign. He had been close-lipped since the start of the flight, even though Burke wore a captain's bars. Furthermore, his hard face said he intended to remain that way. Burke sighed and tried to settle himself more comfortably into the bucket seat. The pleasant warmth, the droning of the engines and the unchanging face of the sea made him drowsy; he was glad when the first faint rise of the island crawled above the western horizon. He moodily considered it—a blur hugged close to the sea, a flat pancaked mass except where its northern end slanted sharply upward, terminating in cliffs which fell sheer to the water. It was the profile of a Navy flattop whose back had been broken, only this flattop was a desert island some twenty miles long. Yoland Air Development Center—something told him he wasn't going to like it.

He was studying the island when he caught sight of another plane out of the corner of his eye, a black dot against the sky, moving in from the sea south of the island. The pilot had spotted it at almost the same instant and was scrunched forward in his seat, watching intently. After a moment he lifted his mike:

"Light Boy calling Sandlot. Light Boy calling Sandlot . . . ."

The response came immediately: "Sandlot to Light Boy. We read you loud and clear. Come in, Light Boy."

"A box coming in from the southwest . . . high," the pilot said. "Do you read me?"

"Affirmative—hold it." There was a brief silence followed by a new voice:

"Watch that box, follow. Wing is aloft. That is all."

"Okay, roger and out." The pilot pushed the mike aside and leaned forward, stretching his neck to follow the incoming plane. It was a larger dot now but still high, far away.

Burke followed the procedure curiously, idly pondering the pilot's absorption in the newcomer. Box—a curious name, he mused. He probed his memory for a connection but found none. Strange, he thought he knew everything that flew; had flown most types, in fact. Perhaps the term "box" was used to designate opposing aircraft in some purely local war games. Irritably he pushed the conclusion aside—it didn't make sense—and switched his attention to the newcomer again.

It grew steadily larger, slanting downward at what appeared to be a crossing course. His eyes picked up more detail. It did resemble a box—a short, stubby-winged aircraft with a faintly familiar squareness—a bumblebee design. The pilot had grown tense, alert, as if every sense were focused on the squat plane which momentarily grew larger. Burke groped for a minute before he had it: catapult job, that was it. He watched with growing interest; there weren't many catapult planes around anymore. Fast, too. After a moment he grew alarmed.

The box was coming in faster, slanting downward toward what seemed inevitable collision. Fool's going to buzz us, he thought. No, that wasn't it, either. He threw a quick glance at the pilot. The major's face was intent, his eyes watchful, wary. He had the air of a cat prepared to spring. Burke sensed the tension, felt the coming crisis. Something was wrong, wrong! His own muscles had become corded, taut. He tried to relax and failed. The box was close, close . . .

The pilot suddenly moved the controls; the camair went into a hard left bank, throwing Burke's body to the right. His immediate reaction was that the plane wasn't stressed for such a tight turn; they were too low. They would lose a wing, or dip one . . .

He thrust the thought from his mind and hurriedly looked for the other plane. Something bright whizzed by—one, two, three—flashing objects that left vapor trails in their wakes. The pilot came out of the turn and pointed the plane's nose toward the island, skimming low over the choppy sea. His tight face told Burke not to ask any damnfool questions. He didn't. They raced toward the island's south end, the flat end.

Burke bewilderedly tried to piece together the puzzle. The strange plane had cut loose a salvo of rockets. Impossible! This was off California in a world at peace, but that salvo had been rockets. Damned right, he knew rockets when he saw them. You couldn't fool a fighter pilot on that score. This was no war game, either. His eye caught the box again. It was off to one side, banking, and had gained altitude. It was straightening now and slanting downward again, moving far faster than any catapult plane was supposed to be able to go. Its deadly square shape hurtled toward them, boring through the sky.

Burke shivered apprehensively, wishing he were at the controls. He snapped a look at the pilot—his face was set, his eyes bright with expectation, his jaw muscles taut. Burke could almost see him calculate the exact instant to throw the camair into another evasive maneuver. His mind told him this couldn't be real; his senses told him it was. Real and deadly. His life hung on the actions of the hard-faced major next to him. Perspiration stung his eyes, and his gut muscles tightened into a hard knot. He shook his head to clear his vision. The box was coming fast . . . fast. There was a sudden hellish din, a high whine and . . . the box exploded!

He gave a startled gasp. The box was there—had been diving to destroy them before it exploded in a puff of smoke, flaming, plunging into the sea. The high whine! He recognized the sound before he actually saw the delta wing. It had come down from nowhere to blast the box out of the skies. Now it was climbing, shooting into the sky like an arrow. Air Force fighter-interceptor. He swung toward the pilot with a bewildered look. His voice, when it came, was harsh with incredulity:

"Did you see that?"

The pilot glanced stonily at him and drawled softly, "Didn't see a thing."

"Listen, a fighter-interceptor just knocked that plane you call the "Box" out of the sky after the damned thing fired—"

"Didn't see a thing," the pilot cut in. His face took on an enigmatic expression that said the issue was closed. Okay, so the pilot was a clam. But a damned cool one, Burke decided.

He eased back in his seat, his mind a turmoil of questions. Everything's screwy, he thought, and had been for the last year. The world was at peace—or as much at peace as it ever got. Yet they had been attacked by a rocket-armed catapult plane off the California coast. Not only that but the pilot had known what was coming up the moment he had spotted it. His immediate call to Sandlot—that must be the island, he reasoned—proved that. He had known what a box was . . . what it was going to do. So had Sandlot. But the box had been destroyed—blasted from the skies by an Air Force fighter-interceptor.

Wearily he tried to fit the pieces together. Up to a year ago he had been pushing a rocket job in stratospheric research. High . . . high in the shadow-land of near space; he had loved it, had worked hard. Then, inexplicably, the senseless comedy had begun. He had been transferred without warning to glider school. Glider school! Christopher Burke, hot-pilot-number-one, reduced to glider status—a bitter pill. But he had learned to handle the fragile-winged planes like a veteran and had even liked it in the end.

He had been snatched from glider scool and sent to the Randolph Field School of Aviation Medicine. There he had been tested psychologically, physiologically, had ridden centrifuges until he had blacked out, had been exposed to near-space conditions in the high altitude chamber. He had been hurled and torn and buffeted while myriads of electrodes monitored his heart, brain waves, galvanic skin response and what-not. Just as unexpectedly he had been transferred to the Navy's Underwater Demolition School. Frogman Burke, thrashing around in an alien environment which his Navy companions had seemed to love. A fighter pilot with fins! Now this—the so-called Yoland Air Development Center. They'd probably teach him lion-taming next. Yeah, the Air Force was balmy, all right.

The island filled the horizon now, not quite as flat as it had first appeared. There were low ridges, hollows, but it was essentially a plain—a desert plain, all but the sharply slanting northern end. The landing strip was narrow, short, hardly long enough for even their light plane, and certainly no fighter-interceptor had ever used that field, Burke thought. He saw a cloud along one edge of the strip—a jeep racing to meet them. The pilot brought the camair in smoothly, stopping with runway to spare.

The jeep driver proved to be a thin, hard man in dirty dungarees with corporal's stripes inked on the sleeves of his fatigue jacket. He moved Burke's bags to the vehicle without a word, then climbed in and waited. When they were ready to leave, the pilot performed his first human act. At least Burke thought it was his first. He grinned and said:

"Glad to have had your company, Captain. Hope you enjoyed the ride."

"Thanks." Burke returned a crooked grin. "Hope that wasn't too routine for you."

"Could have been worse." The pilot lifted his hand in a nonchalant gesture as the jeep started off. Burke leaned back, watching the bleak landscape sweep by. Sand and sage and eroded wind-etched rock, the architecture of age. Funny, he'd never heard of Yoland Air Development Center before his transfer. Transfer . . . he winced and shut out the thought. The jeep climbed a slight rise and he saw buildings in the distance—a handful of scattered barrack-like structures set amid a vast desolation. It was like a dreary painting; the picture depressed him. Here he was, twenty-eight, dreaming of a bright, rosy future—maybe even a bird colonel before he hit forty. The island didn't seem at all in keeping with his plans. They reached the nearest of the buildings and the driver pulled the jeep to a stop.

"The administration building's right across the way, Captain," he suggested. "Need a hand with your bags?"

"Thanks, I can manage okay." He lifted his luggage from the back seat and watched the stubby vehicle roar away. He turned toward the building.

"Glad to have you aboard, Captain," Colonel Jared Rikeman said as they shook hands. "Sit down." He indicated a seat across from the cluttered desk and dropped into his own chair.

"Thank you, sir." Burke made himself comfortable while covertly studying the commanding officer of Yoland Air Development Center. He appeared about fifty, a small, thin man with a narrow face, a tight slit for a mouth, sparse graying hair that failed to cover a balding pate. He had a fragile, almost delicate look that unaccountably made Burke think of a sparrow. There seemed nothing striking about him until one saw his eyes. They were hard and pale, like sunstruck quartz, not cruel but uncompromising, like his thin, tight lips.

"I would like to tell you a little about your present assignment," he began, in a brittle precise voice. "You're here because I requested you, Captain." Burke masked his surprise, feeling unaccountably disconcerted.

"In case you're wondering, everything that's happened to you in the last year has been because of this assignment. The gliders . . . centrifuge, frogmen—everything."

"Yes, sir," Burke said, bewildered.

"I believe that any man that comes to a new post—especially one like Yoland—should know exactly what he's getting into. Then . . . if he wants . . . he can apply for transfer. With a seal on his lips, of course." He smiled frostily as if to indicate that the seal would be more drastic than remaining at Yoland.

He began speaking again, moving his hands with light quick gestures to emphasize his words. Burke quickly forgot his wispy figure, the almost birdlike movement of his hands. He was caught by the ice of his eyes, the precise razor-like quality of his voice. His initial impression of the man was replaced by a grudging respect. Rikeman was no patsy, he decided. It was a moment before he became aware of his actual words.

"I'm not a dreamer. There's no music in the sky where I'm concerned, Burke. I see the stars as useful aids to navigation. Nothing more. I regard space as Alexander regarded Asia—as a battlefield, an area to be conquered and won. And it is a battlefield. Not next year, not tomorrow . . . but today. Right now the United States and Russia are locked in deadly conflict—a state of undeclared war."

He paused and Burke shifted uneasily. The colonel had the knack of looking at him as if he were looking right through him. He found it disconcerting.

Rikeman licked his lips. "Hot war . . . cold war . . . undeclared war, it's all the same war."

"Seems kind of hot to me," Burke remarked pointedly.

"Oh . . . that, the box." Rikeman frowned. "That's part of the undeclared war: war in which aircraft, submarines and even troops are like spies—operating without identifying marks of nationality—battle units for which no nation will take responsibility. Neither side can afford to recognize or acknowledge that hostilities exist. The world is balanced on a sword, and will be balanced until one side or the other gains decisive advantage. Then the cold war will explode."

He looked meaningfully at Burke. "Would you ordinarily expect an enemy submarine to risk detection by surfacing long enough to launch a catapult plane merely to shoot down one of our liaison aircraft?"

He answered his own question decisively: "No, the fact they did shows they knew you were coming, Burke. That will give you some idea how important your job is. And some idea how efficient their espionage is," he added grimly.

"You were speaking about space," Burke prodded hopefully.

"Ah, yes . . ." Rikeman studied him thoughtfully. "Right now the military forces of the world are rushing their heavy artillery into the main theater of operations." He flicked his thumb upward. "The battle ground is up there, and the Russians are ahead. Their heavy artillery is rolling across the skies . . . through black space, weapons that will tilt the balance irrevocably in their favor—unless we stop them."

Burke attempted to conceal his surprise. "The new satellite?"

"No, the enemy's new satellite is just an advance guard. Others—like one launched this morning—are on the pad." Rikeman arched his eyebrows, tilted his head to one side as if favoring his left ear, and looked at Burke down the long bridge of his nose. One hand came up from a desk drawer holding a box of cigars.

"Care for one?"

"Thank you, sir." Burke fumbled for a match and held it until the colonel had lighted his cigar, then applied the flame to his own. The colonel chomped on his smoke a moment before continuing.

"That satellite you mentioned is not a mere satellite, Burke. It's no *Sputnik* . . . *Explorer* . . . *Vanguard,* no

Thor pot-shooting for the moon, or harmless *Mechta.* It's a weapon, a deadly weapon, a giant electronic laboratory hoisted into the sky—a master spy eye. Right now it's ferreting out every secret we have."

Burke interrupted quietly, "we've got Russia pin-pointed the same way, sir. Hell, we've got SAC on an around-the-clock alert. Begging the expression," he added hurriedly.

Rikeman said softly, "That's where the other birds come in—like the one launched this morning. They won't be mere spy eyes. They'll be the heavy guns—space-borne hydrogen bombs, weapons to force us to our knees—victory without war. Within the month . . ." He moved his slender hands upward in a gesture of negation. "We hoped to win space—the moon and planets—through an orderly technological development. That's why our space probes, our unmanned moon messengers. We're trying to achieve the science that will allow us to burst into space in one big jump rather than creep into it through the decades. We've gambled that Russia can't stop us . . . that we can beat them." His eyes found and held Burke's.

"Russia's gambling they can stop us, can control earth by placing giant hydrogen bombs in orbit . . ."

"I thought the orbital bomb was impractical," Burke interjected thoughtfully. "Once in orbit they can't be dropped—would remain there."

"But they could be propelled down," Rikeman interrupted impatiently. "Just a slight downward push on a bomb and it would begin moving in, approaching the earth in a spiral path, its course determined by computers from data gathered by the spy eye. Yes, it could be controlled. Otherwise the Russians wouldn't be placing their money on it . . . and we wouldn't be racing to complete our anti-satellite missile."

He nodded grimly at Burke's obvious surprise. "Yes, an anti-satellite missile. That's what brought on the present crisis. It's developed, in production—almost ready for the field. Present launching equipment can be used. Russia's mastery of space depends upon their ability to stop us within the next few weeks. They hope to do it with satellite hydrogen bombs. The bomb in space means they have solved the re-entry problem . . . the refinement in guidance and controls to send hydrogen warheads plummeting to earth at an exact time and place. According to intelligence they'll have three positioned within the next few weeks. Then they can lay down an ultimatum, force us to dismantle our defenses and scuttle our weapons, shelve our dreams of space. They would then proceed to occupy the moon and planets while we wait helplessly by with death always overhead."

"But the anti-ICBM's?" Burke questioned feebly, jolted by the colonel's words.

"Are good for knocking down ICBM's," Rikeman interjected. "And the space bomb has another deadly advancement. It carries its own atomic anti-missile missiles, monitored and fired by self-contained radar. They're ahead of us, ahead of our anti-satellite missile by mere days."

He smiled faintly. "Our new weapon carries missiles to knock down their anti-missile missiles. Fantastic, isn't it?"

Burke nodded dumbly.

"They've got us whipped."

"No!" Burke exploded.

"Precisely. That's where you come in." Rikeman's eyes held a satisfied gleam as if he had just snared Burke in an unescapable trap. Burke waited, uneasily meeting the analytical stare.

"Let me regress into history a moment, Captain. In April of 1864 the Confederate ram, *Albemarle* came down the Roanoke River, blasted a handful of gunboats and forced Fort Wessels to surrender. One ram held the entire area. But she was destroyed—by a torpedo exploded under her hull by a Lieutenant Cushing. One man did that, Captain."

"I don't get the analogy." Burke inwardly speculated where this incredible conversation would take him. Somehow, Rikeman was drawing a net around him. He didn't like the feel of it.

"You know something about the frogmen—the Navy's UDT activities in that battleground?"

Burke nodded.

"One Navy frogman could wreck a whole net of demolition charges protecting a beach. One man could throw an entire military operation out of gear. Those will be our tactics—a holding action to stymie the enemy until our anti-satellite missiles can take over the task of guarding the space roof over the Western world. Well, it's nip and tuck . . . the the reason for the sudden undeclared war. We've got to stop them . . . disarm their bombs before they're positioned—just as the Korean frogmen did their underwater mines. Only black space will be your sea. And your target—hydrogen bombs."

Burke kept his face expressionless. Rikeman must be sane, he reasoned, yet the slight figure across from his was talking a Buck Rogers war. Frogmen in space! Fantastic. He kept his eyes riveted on him and said carefully:

"But we can't get a man into orbit . . . yet." He stated the words as a question, half-fearful of the answer.

"Yes, we can. At least there's a high probability," Rikeman amended. "I'll give it to you straight. The probability of getting a man into orbit is better than ninety percent, if one is to believe the statisticians. Pretty good odds, eh?"

Burke brushed aside the answer. "And living long enough to accomplish the mission?"

"Around fifty percent."

"And returning to earth?"

"Somewhat less than five percent," Rikeman said evenly.

"Maybe considerably less." Their eyes met and held. He leaned forward, his hands flat on the desk.

"I've scanned scores of records. I chose you because of your training . . . ability . . . sheer love of flying. I know you've been sweating to get a crack at the orbital bomber, the baby that's designed to ride above the ionosphere . . . to crack space at better than twelve thousand miles per hour. Right?"

"Right," Burke admitted automatically.

"Well, this is better . . . hotter. This is an opportunity to go where man has never gone before. Higher . . . faster, the very top of the air ocean, Burke. Space . . . space . . ."

His voice became a steel-edged whisper. "Are you that man?"

Burke didn't know that it was his own voice that answered. The words seemed to come out of nowhere, a brave confident voice that said:

"I am."

He didn't feel that way at all.

CHAPTER 2

"OVER THERE IS baby's house," Oliver Chartain said, nodding toward a distant building. He headed toward the low-roofed structure, and Burke obediently followed, wondering who—or what—baby could be. More mystery. His guide was a lanky New Englander with dangling arms and legs and a doleful face that gave him a perpetually sad expression.

His skin was pale, his brown eyes mild, and his thin chestnut hair recessed far back at the temples. When he spoke, which was seldom more than necessary, his voice was midway between a drawl and a twang. Burke judged his age somewhere in the early thirties.

He wondered how his guide fitted into the picture. It was with some surprise he had learned his companion was a doctor. More correctly, a major in the Space Medicine Branch; but, incongruously now, performing the duties of a guide. Clearly Rikeman's operations had strange roots. He walked behind Chartain, his feet kicking up little fountains of dust.

Chartain reached the building and rapped sharply on its single door. Burke heard muffled movement inside before it swung abruptly open, and he found himself staring at a figure clothed in a garment resembling a Navy full-pressure suit. Surprisingly, it was fully inflated. A face smiled ludicrously at him from behind a heavy faceplate.

"This caricature of a human being is Lieutenant Junior Grade George Trig, alleged bomb expert of the Underwater Demolition Teams," Chartain explained in one of his rare bursts of speech. "The Navy loaned him to the Air Force . . . mainly to get rid of him, I suspect."

Navy. Now how the hell does the Navy fit into the picture, Burke wondered. Chartain had turned back to the suited figure with a bored expression. "Come on, let out the pressure. You've got distinguished guests."

Trig grinned and dexterously opened an oxygen valve, letting the air hiss from the suit until it hung limp on his body, then snapped open the faceplate and heaved an audible sigh of relief.

"Three pounds per square inch," he said, looking quizzically at Burke. "That's a lot of pressure for a poor underpaid junior grade looie."

"I'll endorse that statement." Burke understood his discomforture exactly. Three psi pressure was no picnic. In the low vacuum of near-space, suit pressure was necessary to keep the body from literally exploding—like a fish pulled from the depths of the sea.

Trig was looking expectantly at him. "I didn't catch the name."

"Burke. Christopher Burke. Looks like I'll be with you for a while."

"Ha! Better hands you couldn't have picked. But come in. Enter and meet baby."

Chartain looked wryly at Burke. "As you must have surmised, Trig is a clown. No wonder the Navy was happy to get rid of him."

Burke grinned happily. Human beings. People he understood. Supposing they had all been like Rikeman? He shuddered at the thought and followed him into the room.

He wasn't impressed by his first sight of baby. It was a huge cylinder with an ovoid-shaped nose suspended a few feet above the floor by a cable at either end. He judged it to be around fifteen feet long and six feet through its thickest diameter, with a ring of snubbed antennas protruded from its nose. At the base was a second ring of circular plates. The three men studied it for a moment.

"Okay, I give up. What exactly is it?" Burke finally asked.

"You mean Rikeman didn't tell you?" Chartain blurted, for once losing his aplomb.

"He didn't tell me a thing," Burke replied sourly. "He just sold me a bill of goods—hooked me."

"Sounds familiar," Chartain drawled. "We got the same pitch."

Trig smiled agreement. "Baby's a hydrogen bomb," he explained. He caught Burke's involuntary start and hastened to add: "Not a real one. Just a dummy."

"Of the new satellite?"

"The hydrogen warhead the Russ just put into orbit," he affirmed. "A quite accurate representation—we hope." His finger indicated the circular plates at the base of the nose.

"Even to baby's anti-missile tubes. They're covered for windblast protection during the high-speed climb into orbit but are opened by servos when it reaches space." He tapped the nose of the bomb and explained: "It has its own defensive radar . . . own atomic counter-missiles. Pretty neat, eh?"

Burke whistled softly. Incredible, he thought, yet Rikeman had claimed the same thing. Missiles, anti-missile missiles and now the anti-anti-missile-missiles. It was a far call from the battles he had dreamed of. He lifted his eyes from the dummy of the bomb and looked questioningly at Trig.

"I'll show you how to disarm it," the UDT man said. He turned toward the dummy, then swung back and looked soberly at Burke and said:

"The job looks simple here. Deceptively simple. But it'll be a lulu in space." His arm indicated a small rectangular plate recessed into the body of the missile wall behind the nose. "You unscrew this . . ." Despite his gloved hands he dexterously fished a screwdriver from a leg pocket and went to work on the plate. A moment later he had it off, then drew a flashlight from his belt and threw a beam into the aperture.

"Observe the interior, an unholy mess of wires."

Burke's eyes followed the light. There was a honeycomb of fine, variously-colored wires running in all direction. He thought it resembled the interior of a computer rather than a weapon.

"And last you do this . . ." Trig thrust a gloved hand into the opening, squirming his body to reach downward and worked for a moment, his lips tight with effort. Finally he withdrew his arm and turned triumphantly toward Burke.

"There, baby is disarmed. Just a matter of breaking the right circuits."

"Well, that looks easy enough."

"There are a few complications." Chartain drawled the words slowly, letting his eyes slide over the dummy. "Doing the job in space is quite different from doing it here."

"Amen," Trig put in. "Space is black."

"You'll be weightless. You'll have to learn to handle your body all over again."

"I've experienced that in some of the fast hardware," Burke offered. "You get it when you put a jet through a fast parabolic trajectory . . ."

"But for only a few seconds at a time," Chartain interjected. "On this trip you'll be living with weightlessness, and perhaps complete disorientation, in the bargain. There may be all kinds of strange effects we hardly suspect yet, and odd psychological reactions."

"How about radiation?" Burke asked curiously.

"The hightly lethal bands lie above the expected orbital altitude . . . we think," Chartain answered slowly. "It won't be simple."

Burke said, "It sounds great. Any more complications?"

"Only one." Trig's face turned serious. "The enemy knows exactly what we're doing, the steps we're taking. We're operating on the best intelligence available, but we can't expect intelligence to give us the whole story. Yet we know that the enemy must be taking measures to counteract our actions against them."

He hesitated. "The one thing that a bomb demolition man always has to look for is the booby-trapped article. My guess is that there'll be a booby-trap in space . . . a booby-trapped hydrogen bomb. But that you seldom know until you try disarming one."

Burke whistled softly and Trig continued:

"Cheer up, Captain. It's all in a day's work. Besides, think of the glory. Think how it will look in your record. Captain Christophor Burke gave his life for . . ."

"Shut up," Chartain snapped.

"You can afford to laugh," Burke said grimly. "It's my life."

Chartain looked startled. "Didn't Rikeman tell you anything?"

"Tell me what?"

"You might be the pilot, but we're the passengers. Trig's the one that'll do the job—yanking the wires is his baby."

"And you?"

"I'm your guardian. I provide the aspirin when you run into headaches."

The amenities over, Trig began explaining the intricacies of baby in detail. Burke quickly decided the slim, wiry UDT man was not entirely the clown he would have people believe; he was also an extremely skilled technician. His one regret in the present assignment was that he would be away from his underwater world for so long.

"Once you've sampled the sea, there's nothing else," he told Burke simply. "It's the last great unknown."

"Except for space," Burke reminded.

"Yeah, but I'm only tackling that because Rikeman hooked me."

"He told you you'd be the first of a new breed of frogmen," Burke conjectured.

Trig looked startled. "How'd you know?"

Burke laughed without answering. It was easy to guess Rikeman's reasoning. He needed men used to performing highly technical and dangerous tasks under extremely hostile environmental conditions. Where else would he turn but to the Navy's UDT—Underwater Demolition Teams—for the first of his space frogmen? It was a natural. Chartain was selected, he guessed, because the military badly needed medical data on men in space, data which telemetered instruments and surface experiments could only indicate but never ascertain for sure. However, he soon discovered that the doctor also had been given extensive schooling in bomb demolition work. Chartain appeared extremely capable, although slower of movement and more deliberate than Trig. Burke surmised that he would be less apt to take foolhardy chances than his light-hearted companion, yet more relentless in seeing that a job got done. There was something comforting in the grave-faced Chartain that Trig lacked. The UDT man was a spur to action—a slim, wiry, olive-skinned daredevil with a humorous smile and laughing black eyes, the kind that filled the obituaries of battlefields—and won the medals. But Chartain was the assurance of a job well-done, a cautious, analytical workman—slow but persistent.

But how . . . how would they get into space? Into orbit? Rikeman hadn't explained that. If Chartain or Trig knew, they weren't saying. They talked . . . up to a point. Beyond that they volunteered nothing.

After the demonstration Trig suggested swimming. By the time Burke got his trunks and donned them under his clothes, the UDT man had managed to scrounge a jeep.

"It's pull," he laughingly told Burke. "Now that we're wheels they won't deny us anything. Sometimes it makes me think of that last banquet they give condemned men."

Burke soon found Trig was right. They were wheels. They were the heart and soul around which Operation Spacecomb—as it was called in guarded whispers—had been built. The destroyers and submarines that combed the seas, the high-Mach aircraft that waited aloft, the saucers that monitored the skies, the marine patrols and the missile batteries—all were but adjuncts of the main operation. But he and Trig and Chartain were its heart and soul. They and the crisp cigar-chewing colonel who claimed that he never dreamed. Yet this fantastic venture was his dream. Because of him they would go into space, ride the very top of the air ocean, skim the black rim of the exosphere hunting hydrogen bombs. He shivered involuntarily. His chances of survival were less than five percent. Perhaps far less, the colonel had admitted. Yet, someone had to take that chance.

He looked sideways at his companions. Trig was maneuvering the jeep out onto the beach. His face was wreathed in smiles. Apparently he had already forgotten baby, space, the task ahead, and was thinking only of the water . . . of fun. Burke studied Chartain's profile. His lantern-jawed face was serious, his eyes fixed on a point ahead. Burke moved his head to see what he was looking at. Nothing—only the gentle waves moving in to the shore. Chartain wasn't looking at the beach; his eyes were focused on another time, another place.

Trig swung onto the sand and parked; they clambered out, discarding their clothes and tossing them into the jeep. Burke finished first and was waiting for his companions when he saw a figure rise from the sand near the water's edge. He took a fast second look. Incongruously it was a girl. She was moving toward them. A pretty girl, he amended. She waved a greeting as she drew nearer. He decided his initial impression had been a vast understatement. She was beautiful—the tall lithe beauty of flat planes and ample curves, of corn-yellow hair against an olive skin. Trig looked up and glimpsed her approach for the first time.

"The old man's daughter," he said out of the corner of his mouth. "Ain't she a honey?"

"Yeah," Burke answered dreamily. She reached the jeep and halted, looking inquisitively at him.

"Hi, Laura," Trig greeted nonchalantly. He tossed his shoes into the jeep and smiled at her. "This is Captain Christopher Burke, a new addition to the menagerie."

He nodded at Burke. "Miss Rikeman, our master's daughter. Much better looking than her father," he added.

"Just Laura," she told Burke. She wrinkled her nose archly at Trig.

"Just Chris," Burke responded.

"It took me two weeks to get to the first-name stage with her," Trig complained sourly to Chartain. "This bird must be a wolf."

"That makes two of you." She smiled gaily at Chartain and added: "Or perhaps three."

"Madam, I'm no wolf," Chartain said with mock severity. "But would you care to join *me* in the water?" He emphasized the word "me."

"I've been waiting for company." She turned and ran toward the ocean with the others following. Later they sat on the sand and talked, until finally Chartain looked at the sun and suggested they had better return.

"What's the hurry?" Trig complained. "It's ten hours before we're due back on the treadmill."

"Orders," Chartain said slowly.

"Man, the sacrifices one has to make for his country," Trig growled with mock bitterness. "How about it—should we obey orders or not?" He looked beseechingly at Burke.

"That's it, put the responsibility on Chris' shoulders," Laura laughed. Burke liked the way she spoke his name. "I always knew you were a man of weak character."

"Weak where you're concerned."

She laughed and turned to Burke. He thought she had the prettiest smile he had ever seen.

CHAPTER 3

RIKEMAN PUSHED THE jeep along the flat of the island's western shore, sliding it around occasional curves to the accompaniment of squealing tires. They topped a low ridge and dropped to a long straightaway skirting the coast; the thinly oiled road vanished in the distance. Leftward the sea met and was lost in a dense morning mist which, in places, parted showing sun-glint on the waters. The land to Burke's right rolled gently, almost barren except for occasional tufts of some broad-leafed grass, and mesquite that gave the island its desert appearance. Once or twice he caught sight of patrols on the beach and guessed they were marines. Several abutments on the bluff overlooking the shore looked suspiciously like pill boxes. He saw a barrel cactus, then a wild goat scrambled up a rocky slope ahead and vanished over a rim. Goats and machine guns. Yeah, the island was weird, all right. The jeep skidded wide in a turn jerking him back to reality. He clutched for support as it slid into a shoulder of loose sand and fishtailed violently before pulling back onto the narrow road. He exhaled slowly, thankful they hadn't overturned.

"Always happens at that spot," Rikeman observed, noncommittally. He smiled faintly. "Used to love to fly until they grounded me. Now I take it out on the jeep."

Burke nodded understandingly. A man flies because he loves to fly. Take that away and there's little left; only the ashes of some halfway substitute. Pounding the jeep was the colonel's ashes.

"You're lucky." Rikeman's voice took on a hard bite.

"How's that, sir?"

"You're still flying. You still have that." He spoke in a wooden monotone, but Burke sensed his feelings. The colonel, like himself, had lived for flying, the magic of high-Mach speed, the blue-black of space near the borders of the stratosphere—the howl and shriek and whine of jets streaking across the skies. But one couldn't fly a desk; not even with a colonel's wings.

He said sympathetically, "It'll be a long time before I pile up the hours you have."

"But they're all behind me." Rikeman glanced at him. "Believe me, you wouldn't be handling this job if I had my say."

Burke was startled. "No?"

"No—I'd be doing it myself." He chewed his cigar viciously. "Ha! Too old." He spat out the words and lapsed into silence, his face a stony mask.

The jeep topped another ridge and slanted inland, and the sea fell away. The land began to rise, a long steady tilt toward what appeared in the distance to be a highland plain. Burke judged it to be near the island's northern extremity and thought it must be their destination. Ahead lay the answers to all his questions, all the questions he hadn't asked. The *how* and the *when*. Rikeman had merely given him the *why*. His ear picked up a different drone above the sound of the jeep motor and he swung his head backward, looking over his shoulder. A helicopter was moving in; it hovered slightly behind them for a moment before wheeling off into the wastelands. His curiosity was pricked.

"Have they ever. . . ?" He hesitated, trying to choose his words.

"Occasionally," Rikeman drily acknowledged. "They're not up there for nothing." He fell silent and Burke watched the landscape wheel past.

The jeep growled and began moving more slowly. The road steepened; the entire plain tilted higher toward a flattened horizon. A single figure moved along a rim to his left, the familiar profile of a sentry with shouldered rifle. The whole island must be a veritable fort, he thought, yet Rikeman had said it was still being infiltrated. They reached the top of the rise and the road flattened again, pointing toward the center of a level plain. Trucks, jeeps and several quonsets came into view in the distance, but little sign of activity—nothing resembling a project of the magnitude the colonel had claimed. If this were the heart. . . ?

Rikeman drove directly to the nearest quonset and parked, beckoning for Burke to follow as he clambered from the jeep. Burke looked around curiously as he followed the colonel toward the entrance of the building. A large circular metal plate, slightly convex, was visible at ground level off to one side. It resembled the top of an underground storage tank; fuel meant vehicles, weapons, or both. They entered the quonset and his curiosity increased. The interior was a jumble of equipment, both mechanical and electronic, and odds and ends of machinery he couldn't identify. Four forklifts were parked against one wall. His spirits began to pick up.

They went directly to one corner of the quonset and started down a circular flight of stairs, moving down half a dozen levels before being stopped by a sentry, who saluted smartly and stepped aside. Burke looked past his shoulder with an exclamation of surprise. Before him was a vast cavern lighted by great splays from clustered beacons on the walls and ceiling. In the center of the cavern a huge rocket towered on its tailfins, enclosed by a structural tower which could be rolled back on tracks.

Rocket! The realization of what he was seeing jolted him. It reached almost to the top of the cavern—a tall but ponderous appearing rocket with rings of boosters clustered around its girth. He had expected some new type of aircraft, perhaps one launched from the belly of a stratobomber like the early Bell-X models; perhaps even a ground take-off job of unheralded power. But scarcely . . . *this.* He caught his breath.

"That's our baby," Rikeman said softly, "the *Argus.*" His voice caressed the name almost tenderly.

"But—I'm not a rocketeer," Burke protested, with a feeling of dismay.

"Is anyone . . . yet?"

He was right; there were no rocketeers. That was a breed who would inhabit tomorrow—there had to be a first.

Rikeman interrupted his thoughts. "However, it just so happens that what we need is a pilot, not a rocketeer."

"I don't follow the reasoning, sir."

"You will, you will . . ." the colonel chuckled softly.

The *Argus* towered high above him, enclosed in its gantry, its tail fin squatted on the concrete apron. Through the maze of skeletal catwalks and guardrails encasing it he saw the tapered joints which marked each of its three stages. Small viewports were visible high in the nose, viewports and an open hatch. The rocket crouched in its grotto like an imprisoned giant. The cave was a scene of feverish activity: workers everywhere—workers and forklifts and occasional marines with cradled submachine guns held in nonchalant readiness. Somewhere in the distance the metallic voice of a loudspeaker blared.

The rocket was ample evidence of how Rikeman intended to get his frogmen into space. But one thing was certain, he couldn't bring it back. Not that mass with its absence of wing surface. All the reverse thrust rockets and drag chutes and air brakes in the world wouldn't slow that baby down. Rikeman had some other means of returning them to earth once the job was done. He briefly puzzled over the problem, then dismissed it as another factor he would worry about—later. He was bewitched by sight of the metal monster crouched before him, the *Argus,* named for the hundred-eyed giant of Greek mythology who had been assigned to watch the maiden Io, the beloved of Zeus. Only this Argus would have its hundred eyes cast into space—electronic eyes to seek enemy hydrogen bombs from the deep places of the void.

The low wail of a siren sounded, rising to a high shrill scream. Instantly pandemonium reigned. Workers scrambled down the guard rails around the *Argus* and joined the throng already crowding the staircase. Drills, always drills—part of the military you can't escape, he thought. He watched with interest. In seconds the cavern was clear except for several marine guards who remained unperturbed at their stations near the base of the rocket. Two more lolled nonchalantly at the exit leading to the stairwell. The siren rose and fell again.

"Condition red . . . condition red . . ." The metallic speaker blared briefly between the shrill screams. Damned realistic drill, he thought. Rikeman really kept his crew on its toes.

"Captain! Captain Burke!" A stocky man emerged from the stairwell and ran toward him, shouting to make his voice heard above the din of the siren. He reached his side, panting.

"Begging your pardon, sir, but you'd better get the hell out of here. We're under attack."

"What?" Burke bellowed his disbelief.

"Follow me." The stocky man headed toward the exit with Burke at his heels. They reached the surface just as the last truck was pulling away. He looked perplexedly around, then faced Burke.

"Someone's latched onto my jeep," he apologized. "Come on."

He started toward a small knoll located at some distance from the quonset, running with short choppy steps. The long-legged Burke found it difficult to keep up with him and was breathing hard before they reached it. The man indicated a rectangular opening at the base of the knoll and started down. Burke followed him down a flight of stairs which angled twice, leaving him in complete darkness before they abruptly stopped.

"Okay, we're in. Now to find that damned light," he rasped. Burke heard him fumble in the darkness; a click and the interior of the shelter was lighted by a single bulb recessed into one wall. He looked around. He was in a small, square, somewhat damp room with concrete walls and ceiling, the latter but a few inches higher than his head.

"Emergency dugout," the man explained. "Used it when we were testing on the plain—now they got a couple of bigger jobs at a safer distance."

Burke nodded, studying his guide. He was short, cheerful-looking, with a balding crown and flat flaring nostrils that reminded him of a veteran fighter. His hands were large, square, and dirty with broken begrimed nails. He saw Burke's scrutiny and said:

"I'm Missile Sergeant Sam Jardin, but they usually call me Jarhead, sir. The colonel sent me to fetch you just before the general alarm sounded."

"Just a dummy run, isn't it?" Burke asked severely.

"Nope, the real McCoy." He started to add something else when the harsh jangle of a telephone shattered the room. He sprang to one corner, lifted the instrument from a niche in the wall, and listened for a moment. The expression on his face told Burke he was getting chewed out.

The voice died away and Jardin turned toward him, extending the instrument.

"The boss colonel," he explained. "He's irked." Burke took the instrument and acknowledged. Rikeman's voice bit into his ear.

"Burke, we're under attack. The saucers picked up a plane . . . and now a missile, probably sub-launched. Jardin's got you right in the target area."

"Wasn't much else he could do," Burke said. "Someone snatched his jeep."

"Stay in the shelter and hug the ground," Rikeman curtly ordered. The instrument clicked in his ear. Burke's mind raced. Missile attack! As the full impact of the warning hit him, his skin began to crawl. Jardin read his thoughts.

"If it's an atom warhead, this shelter's just so much tissue paper. Let's get topside and watch," he suggested.

Burke nodded, thinking he would rather face an attack with his face to the sky. He hesitated, then moved toward the steps with the missile sergeant at his heels. He halted at the top, momentarily blinded by the light.

"Feels good to get out of that trap," Jardin commented. "Never did go for cellars, except the wine variety. Let's climb higher to where we can see the coast."

Burke nodded and studied the sky. Sub-launched, probably from far out in the west, he thought. He followed Jardin up a steep trail until they reached a spot where the sea was visible. Burke was surprised; it seemed closer than he had believed.

"Captain—look!" Jardin clutched his arm and pointed toward the extreme northern end of the island. A fire trail was rising, slanting into the west. A second, then a third followed.

"Our surface-to-air jobs," he exclaimed enthusiastically. He glanced at his watch. "They had to wait until the range closed enough but, boy, they're really on their toes."

The firestreams were slanting upward, rushing into the west, growing faint in the distance. Suddenly a small black puff darkened the sky low above the horizon.

"Got it," Jardin exulted. Burke waited, estimating the distance. A long moment passed before the roar and concussion reached them. He turned toward Jardin and grinned.

"Yep, got it," Burke affirmed. "Lucky for us. That baby was close." He glanced back toward the sea and froze. A plane, low-flying, was winging in from the sea just above the waves. It was a dot, almost unrecognizable—but that shape! It was racing low above the water, a technique to avoid radar detection. His eyes followed its flight. It came straight in. Jardin caught his expression and followed his eyes, then uttered a curse and said calmly.

"A box . . . using the missile as a decoy to sneak in. Boy, they're not missing any bets." He cursed again.

They watched, silently, but Burke's mind was in turmoil. Just now it seemed to him that Rikeman had underestimated the situation on the island. Just beyond the beach black puffs appeared around the plane and it dropped still lower, so close to the sea that Burke thought it must be raking the waves. He caught another sound—the harsh whine he loved. He looked up. A delta wing was thundering in from the southeast, two more strung out behind. The lead plane banked, storming down in a tight turn. Burke caught his breath. The delta wing was moving too fast for a turn that tight. It would pull its wings—or black out the pilot. The plane suddenly straightened and hurtled down in a hard slant toward the box. He couldn't hear the thunder of its guns . . . couldn't see the deadly rockets stream from their launchers. A winking flame . . . a puff of black smoke rose just above the beach, then the fighter-interceptor was climbing again. A great pride welled in his chest. He turned to Jardin.

"They ought to make that pilot a general."

"Amen." The missile sergeant grinned. "I expect they'll do better than that."

"Better?"

"Yeah, he'll probably get a forty-eight."

CHAPTER 4

THE FOLLOWING MORNING dawned cloudless, clear except for patches of mist swirling low over the sea. Burke was studying the distant shore and contemplating a languorous day when Rikeman summoned him.

"The honeymoon is over," he told him when he entered. "As of now you're on schedule." He spoke in a flat precise voice that precluded the brief intimacy he had allowed the previous day. Burke listened attentively while Rikeman outlined his agenda. When he had finished, Burke hesitated, then said, "There's one thing that puzzles me . . ."

"Well. . . ?" Rikeman's face was cold.

"The *Argus* doesn't look like anything that could be piloted back to earth," he said questioningly.

Rikeman studied him a minute, his unfathomable eyes making Burke shift uncomfortably. Finally he said, "No—

it isn't. There's a second vehicle for the return—the *Moth.* You'll learn about it soon enough."

"Seems time is pretty short," Burke doggedly pursued.

"Yes, it is—shorter than you think," Rikeman blandly agreed. He took on a kinder tone.

"I appreciate what you're up against. I had intended to let you absorb the essentials of the *Argus* before burdening you with problems related to the *Moth.* But as long as it's bothering you . . ."

He talked . . . talked at length. Burke listened, part of his mind filled with wonder at the audacity, far-sightedness and daring of the colonel's plans for returning them to earth. The *Moth* was little more than a super glider designed for re-entry. It would be fired into orbit, would rendezvous with the *Argus,* would return by a plan so daring that it verged on the fantastic—or suicidal, he thought. Misgivings gnawed at him. Was he iron-nerved enought to complete such a mission? Rikeman abruptly stopped speaking and dismissed him.

His schedule turned out to be a sixteen-hour day. Mornings were occupied in absorbing the principles of space navigation and the workings of the global Navy-Air Force communication fan which would track, position and guide him toward his space targets. Afternoons were dedicated to the rocket's complex instrument system and guidance controls. In between—he wasn't sure just how—he was expected to absorb all the necessary data there was to know about the *Moth,* the vehicle he would pilot back to earth.

Burke found one bright spot in the grim program; Missile Sergeant Sam Jardin had been assigned his guide, assistant and general flunky. He quickly discerned that the profane sergeant knew every inch of both the *Argus* and *Moth.* He was even more gratified to discover that Jardin possessed a great deal of information concerning Laura Rikeman. The colonel, he learned, was a widower, and Laura his only child, was sharing his official quarters until her return to graduate school in the fall.

The next few days passed quickly. Burke decided his greatest problem was space navigation and accordingly devoted the greatest number of hours to it. He found that in general there were three methods: no control, ground control and on-board control. The no-control principle consisted merely of the ballistic flight technique—firing a rocket into a pre-determined Keplerian space path and hoping the computations for putting it into orbit were correct. He was dismayed to learn this was precisely the method the *Argus* would use, with some modification, despite the fact that such ballistic paths were subject to wide error. Too much or too little power or the slightest deviation from heading could be fatal. However, it employed a servo designed to provide thrust at an exact point in space to place the rocket in a near-circular orbit rather than the elliptical-shaped orbit which otherwise would result. Once in space both ground control and onboard navigation systems would be used. The *Argus* would be followed by electronic and optical tracking devices; in addition, it would emit radio signals when over the Western World to provide ground units more stable position checks. Small steering and propulsion rockets were provided to power it from point to point within orbit.

Rikeman had made it seem easy.

You'll ride the Argus into orbit. You'll move between the Argus and enemy satellites with the aid of small rocket sleds. When the job is done we'll fire the Moth into orbit. It's a rocket that can be simply converted into a glide-type vehicle. If everything goes right, it should be easy. That about sums it up, Burke.

Those were his exact words. That was the way he had explained the mission. *If everything goes right*—that was the key. At the worst he would die. But at the best he would conquer space . . . see the earth as a fantastic ball whirling beneath him as he rushed through the void at almost eighteen thousand miles per hour. That was adventure. What more could he ask?

It was several days before he had an opportunity to see the *Moth*. When he did, his hopes alternately rose and fell. It was, if anything, more complex than the *Argus* itself. Its essential features were those of a glider with folded wings and body contained within the shell of a rocket. Once in space the outer shell would be peeled off, then the *Moth* would emerge—graceful, fragile, a delicate-appearing glider which, nevertheless, was supposedly strong enough to carry the *Argus'* crew through nature's rampant hell of energies. The untested *Moth* intrigued him, but it was the *Argus* with its intricate instrumentation, to which he devoted long hours.

The complex space cabin was hermetically sealed, a complete self-contained micro-environment designed to support and protect life beyond the air ocean. A large part of its space was taken up by oxygen cylinders—sufficient oxygen to last perhaps a few hours over a day. No more. The short time the space cabin was designed to support life failed to bother him. In much less time, he thought, he would be either the conqueror of space, or dead. During that time he would hurtle around the world thirteen times, if they met the rigid schedule, if everything clicked; but no more than fifteen times. That was the maximum leeway allowed by oxygen and the critical firing schedules. He would look down on both poles, Western Europe, Russia, Africa, the Americas—watch the world rotate on its axis like a globe in a classroom. Oceans would be ponds and mountains mole hills. He would look down on births and deaths, kings and peasants; nature's great storms would be but tempests in the teapot beneath his wondering eyes.

Cut the time to an hour and I'd still take it, he thought exultantly. An hour—a minute. No wonder Rikeman's momentary bitterness.

He methodically examined every detail of the cabin. There were ingenious chemical sinks to remove carbon dioxide and water vapor from respiration and purify the air, fans to circulate it, instruments to record its composition, counters to measure micro-meteoric impact and radiation, and self-sealing foams to guard against leaks. The space sleds they would use for travel between the *Argus* and enemy satellites were fitted into the walls like paneling. He drew one down and examined it curiously. It was somewhat longer than his body, narrow, built of extremely lightweight metal. Two small jet tubes, fired by means of buttons on a small control panel, extended from each end to allow it to be accelerated and decelerated. It looked simple enough. But would it work? Well, he'd soon know. He looked grimly around the cabin, thinking it was as snug as a coffin.

Despite his tight schedule he managed to squeeze in time for a swim each evening. He knew the real reason for his sudden interest in the beach was Laura. Trig and Chartain were usually present but, once or twice, he was fortunate enough to find her alone.

He was thinking about those occasions now as he drove toward the beach . . . about Laura and the few days left in which to see her. Time was suddenly rushing; there was just a little over a week left. He reached the beach and parked in his usual place, then ran his eyes quickly over the sand. It was a moment before he saw her, partially obscured by a small dune. Only her legs were visible. His heart leaped and he looked quickly up and down the shore; Trig and Chartain hadn't arrived, might not arrive he hoped.

He moved carefully toward the dune hoping to surprise her.

"Hello, Chris." Her voice floated from behind the dune. He stopped, startled, then laughed.

"I was going to scare you."

"Saw you driving up," Laura explained. She raised herself on one elbow and smiled up at him. "Swim first?"

He asked audaciously, "Before what?"

She reddened, then sprang to her feet and ran toward the water. He followed, conscious that his heart was singing. He dived into a wave, catching the swirl of her body in the tumbling spume ahead. Yeah, it was going to be fun.

Afterward they lay on the beach watching the waves and occasional gulls overhead, feeling the cool dusk breezes play over their bodies until, finally, the first star glimmered overhead. Burke lay on his back looking into the sky. He half-turned his head, admiring her face in profile.

"I hate to return," he murmured.

"So do I," Laura said simply.

He rose on his elbow and looked down at her. The breeze was shelving her hair, blowing it in whisps over her face and revealing the graceful arch of her long neck. Beautiful, he thought—like poetry, or a nightingale's song. He regarded her silently. She returned his look with unfathomable eyes, her lips half-parted. Finally he spoke:

"Laura?"

"Yes, Chris." She moved to a sitting position and faced him in the dusk. He bent toward her and suddenly she was in his arms. He kissed her hard, then more gently, feeling her respond. Finally he lifted his lips and looked down into her face. It was shining.

"Laura," he whispered.

"Chris." She wriggled free and drew away, then rose and stood looking out over the water.

"What's wrong?" he asked puzzled.

"Nothing's wrong." She faced him again. "Yes, everything's wrong," she corrected bitterly.

"I don't follow you."

"You're going away."

"Going away?" It was a moment before he understood. "But . . . it's only a mission. Only a day."

"Only a mission . . ." She turned her face to the sea, speaking in a monotone. "I know all about it, Chris, know the chances. Only a mission." She faced him again. "I'm Colonel Rikeman's daughter, remember? Don't you think I know what your mission means? Don't you think I know the chances, Chris?"

"But . . Laura, it's my job," he protested weakly. "That's why I'm here."

"Your job. You sound like my father," she answered bitterly. "Nothing matters but the job."

"In this case—yes," Burke replied stonily. "This isn't just another mission. It's *the* mission." He stopped talking, feeling the resentment boil within him. After a while she spoke again.

"I know, Chris. It takes getting used to, I guess. I can remember my mother waiting, waiting . . . never knowing. I told myself a thousand times that would never happen to me. Now you come along . . ."

"It's only a day," he repeated doggedly.

"Only a day. And if you get through this it'll be another day, and another."

He said quietly, "Can't we talk about that when I get back because . . . because I will come back, Laura."

She turned toward him again, weighing him with her eyes. Abruptly she moved toward him. The stars had wheeled far overhead before he returned to his quarters that night.

It took Burke only a short while to discover that he was almost completely cut off from the outside world, isolated by the strict veil of secrecy imposed on the island. It was the business of each man to know his task and his alone so that the entire operation resembled some vast beehive composed of thousands of individual cells, each integrated only with the cells immediately adjacent to it. Island liberty had long since been restricted, and only the radio, TV and an occasional newspaper provided links with the outside world. But these media didn't speak of war. To judge by the press and newscasters, the cold war was still cold, still on the political front. One columnist told his readers that peace was nearer. Peace! He should try crossing the channel, Burke thought glumly.

Occasionally Rikeman tossed him a morsel, the substance of which generally was: *The situation's tense, or we're moving our schedule up.* The island was a fort; but it was a fort under siege. The world ostensibly was at peace; the island acknowledgedly at war. The fate of the world might well depend upon what happened on the island.

Despite the rigid censorship, there was a constant word-of-mouth flow of information and rumor, scuttlebutt which Rikeman tried, and failed, to stem. An enemy sub had been sunk by a Navy ASW patrol plane off Santa Barbara; a team of enemy frogmen equipped with demolition bombs had been cut down by marine patrols on the western side of the island; another box had been blasted. There were rumors about the *Moth* and the *Argus*, and rumors which had nothing to do with the island. Burke brushed them aside. All that he asked was that computations for getting the *Argus* into orbit were correct, that the space cabin proved practical, that Rikeman got the *Moth* into orbit on schedule. Give him that much and he'd risk the rest.

It was after midnight when Jardin came to his room. Burke awoke with a start, hearing movement before his whispered name:

"Captain Burke. It's me—Jarhead." He relaxed back in bed, feeling the tenseness drain from his body, a measure of how jittery he was getting, he thought.

"We're moving out . . . now . . . an underground command post . . . the island's nerve center."

"Now—in the middle of the night?"

"Now," Jardin emphasized.

"What's the rush?"

"I don't know," the missile sergeant replied honestly. "All I know is that the old man gave me orders to get you moved, pronto."

"Okay," Burke said wearily, "grab a seat while I get dressed." He slid reluctantly out of bed and hurried into his clothes, then threw a few belongings into his traveling bag and turned to Jardin.

"Okay, let's blow this trap."

"Check." He followed Jardin to his parked jeep. He heard the roar of a truck engine above the sound of voices a short distance away and strained his eyes . . . it looked like a general exodus. He threw his bag in the back and climbed in. The jeep engine roared to life, and Jardin headed north along the coast road, running without lights. The moon was a thin crescent in the west, riding through a field of glittering stars. The sea to his left was smooth, uneasy, an undulating black velvet surface except where the silver shaft of moonglow split the waters and danced on the waves. Jardin gunned the jeep and it leaped forward; he swerved around a truck and picked up speed.

"Think this is it?" Burke half-shouted to make his voice heard above the sound of the engine.

Jardin hesitated. "No, I don't think so; haven't got the

Argus shipshape, yet." They fell silent. The land ahead was a dark mass, gloomy and forbidding, merging with the shadowy sea. Burke unaccountably shivered, even though it was not a cold night. A high odd whistling noise sliced through the air. He involuntarily winced and ducked as Jardin slammed on the brakes and slid the jeep to a stop.

"Hit the deck," he yelled.

"WHOOM! The thunder came from behind them even before Burke could comply. He leaped from the jeep, simultaneously twisting his body to look toward the barracks. A tongue of flame pierced the sky, malevolent and stark, and subsided almost as quickly, leaving an angry red glare against the sky.

"Got the barracks," Jardin snapped. "We got out of that trap just in time."

"Are you sure Trig and Chartain. . . ?"

"Already out," Jardin assured him. He climbed back in the jeep and started the engine.

Despite everything that had happened this *is* peacetime, Burke thought. He stared at the tongues of flame creeping up now, consuming the wreckage of the barracks. No, it was true—the cold war had blown hot . . . hot. He gave momentary thanks that Rikeman's quarters were set off from the barracks area and were guarded by marines. At least Laura was safe. Jardin spoke urgently:

"Come on, we'd better get underground." Burke climbed back into the jeep and the missile sergeant gunned it to life, racing over the road leading to the highland plain where the *Argus* was crouched in its cave. They climbed higher yet and finally turned onto a small level plateau. Several buildings whizzed by in the darkness before Jardin pulled up alongside a quonset and stopped.

"Here," he said briefly. He cut the engine and Burke heard a distant deep-throated roar, alternately rising and falling. It took him a moment to identify it as the sound of surf lashing against the island's northern cliffs. He followed Jardin into a dark quonset. whose entrance was guarded by two marines. The sergeant gave a password and moved into the darkened building with the certainty of long familiarity. He angled down several flights of stairs with Burke at his heels. At the bottom level, Jardin spoke familiarly to a guard and threw open a door. A blaze of light struck Burke's eyes, and he blinked to erase the harshness of the unexpected brightness. He found himself looking into a huge, low-ceilinged room filled with banks of equipment. Its rows of panels and scopes were manned and the air was filled with the murmur of voices.

"The island's nerve center," Jardin briefly explained. "Here's the boss colonel." Burke saw Rikeman approaching, the usual fat cigar jammed between his thin lips.

"Glad to see you, Burke." He spoke without removing his smoke. "There are some sleeping quarters here. Jardin will show you where to hang your hat."

"Thank you, sir." He started to ask about Laura but stifled the impulse. Rikeman saw the gesture and said:

"There's considerable danger. The other buildings were too exposed, as you've just discovered. But I think we evacuated everybody in time." He didn't mention his daughter but Burke knew he was telling him that she, too, was safe. He breathed easier. Rikeman shifted his cigar in his mouth.

"You'll be here until the operation rolls around."

"Yes, sir." The colonel turned on his heel and walked away.

"I'll show you where to hole up," Jardin said.

"Okay." Burke followed Jardin to the far end of the room and through a door leading to a narrow passageway with a series of doors opening onto it.

"Right here, Captain." He opened one of the doors and flicked on a light. Burke found himself in a small cube-of-a-room containing a cot, a small chest of drawers, a table and a single straightback chair. Nothing more. "Looks like a jail cell, doesn't it," Jardin said cheerfully.

"Don't remember. I haven't been locked up recently," Burke responded. He became aware of Jardin watching him, a strange look on his face.

"Okay, out with it," Burke said. "What's eating you?"

"I gotta request to make," Jardin blurted. He paused, confused.

"Shoot."

"Well, if you don't mind, I'd like to go along with you."

"On the *Argus?*" Burke asked, incredulously. Jardin nodded affirmatively.

"There's not room."

"I could take Lieutenant Trig's place—or Doctor Chartain's. Hell, Captain, I know enough about Baby to take it apart in the dark."

"I don't doubt that," Burke said drily.

"Please, Captain."

He studied the sergeant curiously. "Why are you so eager? Looks to me like you're trying to put your head in a noose."

"Your head's in."

"Yeah, but I'm doing it on orders," Burke grinned wryly. "What's your excuse?"

"Myrtle," Jardin blurted.

"Myrtle? What or who's Myrtle?"

"Myrtle's a gal," Jardin explained. "She's trying to hook me—push me into marriage. Honest, she's got my back pinned to the wall," he said desperately.

"She can't reach you here," Burke pointed out.

"Can't, huh?" Jardin replied darkly. "She can reach the boss colonel. She says she will unless I marry her." He looked pleadingly.

"I never promised to marry her. It was just a casual friendship. Hardly nothing more. Now she's trying to put the hooks into me."

"I'm afraid the answer is no," Burke replied, trying to sound regretful. "Besides, if it was just a casual friendship, as you call it, chances are she'll forget you in no time at all."

"That's all it was," Jardin said defensively. Burke asked curiously:

"And just how long did the friendship last?"

Jardin looked down at the floor again, scratching his chin nervously.

"Ten years," he mumbled.

"Ten years?" Burke exclaimed. "You call that casual?"

Jardin brushed aside the question and snapped querulously:

"Isn't that just like a woman—always trying to hook a man?"

CHAPTER 5

DEEP UNDER THE ICY northern waters a dark shadow moved, a spherical shape held captive by a restraining undersea cable. It was one of a number of such shapes, all linked together in a vast subsea net, spheres that moved restlessly with the sea. Silent spheres that generated no energy but trapped and absorbed the noise of the sea, passive sonar buoys that monitored the still green depths listening for a particular sound.

Further to the north a slim cigar-shaped shadow moved out from under the icepack, its conventional propulsive system shooting high energy waves through the water. Behind it moved a second dark shadow, a third, fourth and yet a fifth. Further to the south other submarines fanned southeast, creeping from under the Arctic icecap, boring through the vast Pacific with prows pointed toward a distant small island thousands of miles away.

The energy waves from their engines impacted against one of the captive buoys; electronic instruments responded to the energy from the sea, messages moved over the cable and, far away, were fed into banks of computers. Courses were charted, plotted, extrapolated; data from the computers were sent out again into the green depths.

The anti-submarine submarine, *Viperfish* had long been waiting, listening, its huge engines silenced, monitoring the depths for just such a sound. But when the warning came it was not from its own active sonar, but from the passive buoys far in the northern waters, whose data had flashed through the complex computer net.

The atomic engines of *Viperfish* stirred to life and the sea roiled beneath its huge propellers. To the west its sister ship, the *Hatchetfish,* also stirred. They began to move north, toward the black shadows which had emerged from beneath the icepack. The passive buoys moved restlessly in the green depths and listened, feeding what they heard to the computers.

Rikeman's desk was located in the center of the vast room of the island's subterranean command post, positioned so he could see the huge map of the Pacific which occupied one entire wall of the room. Two walls were taken up by banks of electronic instruments divided into sections, each manned by one of his junior officers. They wore headphones and lip mikes, as did the colonel. Off to one side a Navy officer sat, wearing the three hats of observer, advisor, and liaison between Rikeman and the Navy High Command. One of the junior officers punched a button and spoke into his lip mike:

"*Viperfish* squadron proceeding as per complot, sir."

"They'll contact the eastern sweep?"

"Yes, sir, at 0240 hours if there's no change of course."

"Thank you, Boland." Rikeman flipped off the switch and looked thoughtfully into space while his fingers fished a cigar from a desk drawer. He lit it and puffed deeply, exhaling slowly. After a moment he beckoned a nearby orderly.

"Inform Captain Burke that I'd like to see him . . . immediately."

"Yes, sir." The orderly saluted, wheeled on his heel and left.

Rikeman was studying the wall map when Burke arrived. He motioned toward the chair beside his desk. Burke sat, waiting for him to finish. After a moment the colonel said tonelessly, "The situation's getting rough. It's going to be close . . . close."

Burke felt vaguely uneasy. What was going to be close? He studied the map: red pins, green pins and some bright yellow pins he'd never seen before planted in ocean areas adjacent to the island. The march of pins toward the island was the reason for the colonel's perturbation. Attack, that was it. The enemy was preparing a strike—or running a gigantic bluff, but they couldn't be certain which.

"Here's the situation, Burke. We have to launch exactly on the schedule you got this morning . . . at 12:57 p.m. Greenwich Mean Time. That's 4:57 a.m. local time," he added unnecessarily. "The computer schedule . . . everything . . . depends upon that schedule. We can't vary from it a minute."

"Yes, sir." Burke licked his lips.

"But the enemy is preparing to wreck that schedule . . . will make the supreme effort—short of total war, I believe—to prevent the *Argus* from getting into space."

Burke smiled grimly. "I don't see how they can do it, sir."

"I didn't either—until yesterday." Burke lifted his head in surprise. Rikeman walked to the wall map, picking up a long pointer. Burke obediently joined him.

"Here we are." Rikeman jabbed the pointer to designate the island's location. "A short time ago we got word that the enemy was making a massive submarine breakthrough from their Arctic bases—a three-pronged assault." He moved the pointer to indicate the enemy movements.

"They're coming through the shallow Barrow Sea Valley, past Little Diomede Island, and fanning into the Pacific. Our passive sonar picked them up here"—his pointer jabbed at Little Diomede Island, squatting in the middle of the Bering Strait—"and now they're fanning out over the Pacific in at least three separate sweeps. The most imminent danger is from the eastern prong." The pointer traced a path around the Aleutian Peninsula and down the west coast of the United States.

"But if we know, can't we stop them?"

"We can . . . will. Only I have reason to believe that the eastern sweep is a decoy. Missile-bearing submarines, yes, but submarines the enemy is prepared to sacrifice to draw our anti-sub subs and planes from the central and western sweeps . . ."

"But we're taking counter-measures. . . ?"

"Certainly. Captain Grayling"—he motioned with his head toward the Navy officer—"advises that the Navy has those quarters under control." He lit a cigar and took several deep drags.

"We'll get the eastern sweep okay. Right now the *Viperfish* and *Hatchetfish* are here." He pointed toward a spot on the ocean. "A flight of Navy ASW planes will be covering this area . . . where the central sweep is expected, and a destroyer flotilla is hitting toward the western sweep."

"Looks to me like it's pretty well covered," Burke hopefully supplied.

"That's the damnable part of it," Rikeman grated. "It's too pat; but the Pacific's quite a hefty pond, something over sixty-eight million square miles of water. Unfortunately, only a portion of it is guarded. We suspect—are almost certain—that other sweeps are out there, moving in." His voice dropped.

"They can launch an IRBM with an atomic warhead . . . launch it from the bottom. Can you imagine what that would do to us?"

Burke shifted uncomfortably. "Begging your pardon, sir, but I don't think they'd dare. It would mean war—instant retaliation by SAC."

"Wrong," Rikeman said flatly. "There's a tacit agreement against all-out war. The issue may be settled in an undeclared war—but nevertheless a war in which each side can use every weapon it has within the chosen arena. Our weapon is the *Argus*, our fort the island. And if the island is destroyed . . ." He chopped off the words and studied Burke gravely before he quietly said, "I'm not trying to scare you, but I think you should know the gravity of the situation—know how much depends upon you once, and if, we get you into space."

"You will, sir," Burke said evenly.

"We will try. That's all, Captain. But stand by."

"Yes, sir." Burke reached the door leading to his room and turned back. The colonel was still standing beneath the span of map, a fragile man with his thin face turned upward.

When Burke got up the next morning Rikeman was still at his desk, looking tired, wan, gray with fatigue. He glanced up at Burke's approach and spoke without changing his expression. "The eastern sweep was destroyed at 0420 this morning."

"Wonderful," Burke exclaimed. "Looks like the Navy was right on the ball."

"Right on the ball," Rikeman agreed tonelessly. He studied Burke speculatively. "But at a cost."

"Oh . . ." Burke waited with a sense of bad news to come.

"Five enemy subs wiped . . . the entire eastern sweep. But we lost the *Hatchetfish.*"

"Too damned bad," Burke said with feeling. He visualized the way the *Hatchetfish* must have died. The explosion of a torp tearing her apart . . . the rush of green waters. He shuddered, thinking there were more pleasant ways to die.

"That's not the worst," Rikeman said abruptly. "Captain Grayling has just informed us that Navy units have raised a few new pings. There're probably eight or ten enemy submarines unaccounted for—subs armed with bottom-launching IRBM's or equipped with catapult-launched boxes capable of atomic attack. It can be rough—will be rough."

His concern shook Burke. He started to speak but stopped abruptly as Rikeman turned away, immediately lost in contemplation of the wall map. Captain Grayling had risen and joined him; now they stood, two solitary figures, side by side looking up at the march of colored pins across the face of the Pacific. Burke hesitated, then quietly left.

The sea spread out from the island, smooth and uneasy beneath the stillness of the heavy sea. The waves against the cliffs were a distant rumble rising and dying with the movements of the tides. Somewhere out there was the enemy, he thought. Perhaps even now they were lying on the bottom, waiting, preparing to launch their deadly IRBM missiles, getting ready for the death blow. He shivered. All at once the war seemed near. He thought of Laura, wishing she were somewhere else—anywhere but the island.

He caught sight of movement far out on the sea and looked attentively. Destroyers, he guessed, hull down on the horizon, probing the sea with their uncanny sonar, listening for tell-tale echoes, searching for the deadly black shadows which had come down from the north. Beyond them would be other destroyers and still others. Sisters of the ill-fated *Hatchetfish* were combing the depths while Navy ASW planes patrolled the island's sky and sea approaches. On the island itself a missile battalion waited, its saucers probing the space lands. The island wasn't a dead duck yet. The thought cheered him. He heard the sound of a jeep engine and turned. The stubby vehicle was chugging up the final grade to the plain. He casually watched it approach, then more intently. There was something familiar . . .

"Hi, skipper." The figure next to the driver rose in his seat and shouted at him. Trig! Trig and Doc Chartain. Burke waved, grinning as Chartain skidded the jeep to a stop.

"The Doc and I got lonely so we thought we'd drop by," Trig exclaimed, leaping to the ground.

Chartain wore a pained expression. "I hate you for leaving me stuck with this critter," he said, motioning toward the UDT man. "Thought maybe I'd drop him off and dash back."

"Dash back nothing," Trig exclaimed. "We got our traveling bags. From here on out we're permanent guests at El Rancho Rikeman. Do they have a pool?"

"Sure, straight ahead," Burke retorted, motioning toward the sea. He gave a mock bow. "You're just in time for breakfast. Have you eaten?"

"We haven't but we will. Lead the way, sir."

While they ate, they brought Burke up on what had happened to them since the night the barracks were destroyed.

"Nothing to do but sleep, swim and surf fish," Trig remarked happily.

"You're lucky," Burke told them.

"You mean you've been working?" Trig asked aghast.

"A little," he agreed. Hopefully he asked about Laura, but neither of them could give him any information.

"Just my luck," Trig complained.

"How's that?" Burke looked sharply at him.

"She was falling for me like a ton of bricks. I think that's the real reason Rikeman spirited her away."

"Dreamer," Chartain snorted, but he looked at Burke with knowing eyes.

After breakfast Burke took them to the command post. Rikeman saw them enter and came back long enough to greet them before returning to his desk. When he was out of earshot, Chartain remarked quietly, "All the symptoms of sheer fatigue. It's too much for a man his age."

Burke nodded and shrugged helplessly.

Presently Trig said, "Hell, things are better than I thought."

Burke looked curiously at him. "How so?"

"They were smart enough to ring in the Navy." He gestured toward Captain Grayling. "Just like the Air Force when the chips are down."

"The chips are down," Burke somberly informed him.

"I know," Chartain agreed. "Dawn is it."

Later they walked out into the sunlight, smoking and talking, and each in his own way savoring this last day. From time to time Burke scanned the sky, but there were no vapor trails in the blue. Quiet, he thought. Too quiet, a stillness that felt brittle to the senses.

That night they walked to the edge of the plain and looked out over the sea. It was a black blanket stretching to infinity, filling the air with the muffled sound of water sloshing and gurgling against the base of the cliffs, moving with the flowing motion of some giant amoeba. The sky was a diamond field above them, little lights that danced on the sea like a galleon's magic lanterns; or, Burke thought, like a swarm of fireflies in some dark forest. For once Trig was silent and subdued. Chartain broke the silence first.

"That's what space must be like," he said, nodding toward the sea, "vast and black and formless."

"We'll soon know," Burke replied, caught with the solemnity of the moment.

"Maybe it'll be like the ocean bottoms," Trig said hopefully.

Chartain observed quietly, "The atmosphere filters out the real glory of the heavens, just like your sea water filters out the sunlight as you go down. Once you get above the top of the atmosphere, you'll see colors you never dreamed of —colored stars a thousand times more brilliant than the lights of your sea-bottom life."

Trig pondered his words. "You make it sound better all the time. Where do I buy a ticket?"

"You've got a ticket, son." Burke looked wryly at him. "All we hope is that everything runs on schedule." He shifted his eyes upward. The Big Dipper was a glory in the heavens. Later they walked in silence back to the command post.

CHAPTER 6

Burke woke suddenly, tense and expectant. He lay for a moment trying to relax, staring into the darkness, feeling a vast stillness. Then he slipped from the cot, donned his clothes, and glanced at the luminous hands of his watch. One-thirty, about three and a half hours to blastoff. He hesitated, then headed for the command headquarters. Rikeman was still at his desk, his face drawn and lined with fatigue. He looked up at Burke's entrance.

"Can't sleep, eh?"

"Slept out," Burke replied with feigned cheerfulness. "How's the situation shaping up, sir?"

"Lousy." He bit viciously on his cold cigar. "The seas are alive with enemy submarines. They're throwing the book at us." A light flashed on his desk and he picked up his mike, punching a button as he did. Burke saw Captain Grayling bent over one of the computers at the far end of the room. Even at that distance he looked gaunt and gray. They're taking a worse beating than I am—they have the tougher duty, Burke thought. Waiting was always hard.

He went topside and out into the night. The breeze from the west was cool and fresh. He stood there for a minute, breathing deeply, feeling some of the tension slip away. The stars and roar of the tides against the cliff soothed him. Slowly he walked farther into the night, and almost bumped into Trig and Chartain before he saw them.

"Can't sleep either, huh?" Trig grunted when he recognized him.

"Was doing all right until a few moments ago. Now I'm wide awake as an owl."

"I feel a little jittery myself," Chartain confessed.

"You're a doctor. How about some happy pills?" Trig put in.

"I'd settle for a shot of Scotch," Burke said ruefully.

"Have a cig, instead."

"Thanks." Burke took one from the pack Trig proffered and lit it, cupping the match to conceal the flame. They smoked in silence, watching the sea. It was a clear moonless night. The water was a black shroud under a sky alive with stars—reds and pinks and blues, the big whites and soft yellows of the firmament. Burke felt the coolness on his face and body. It was pleasant, invigorating, and he thought some day he'd like to have a home on a headland exactly like this. A home, wife . . . some children. He resurrected a picture of Laura in his mind.

"Look!" Trig exclaimed, pointing toward the north. Burke swiveled around in time to see a rocket rise and slant into the west. A moment later he felt the whoosh of its passage through the air. A second rocket climbed after the first, slashing upward from the launching site at the extreme northern tip of the island. The fire trails vanished in the west.

"Counter-missiles," Chartain said softly.

"Which means something is headed this way," Trig said, perplexed.

"Or was . . ." Burke kept his eyes riveted to the western horizon. The blackness remained unbroken. Finally Chartain said:

"They're long range babies. The intercept may have been a helluva long way out." Burke started to reply when he caught a new sound—a high faint whine from the southern sky.

"Night fighters aloft. That means the boxes are out," he breathed softly. He weighed his own words, even while he spoke. Boxes and missiles—Rikeman's war was very near. Right now he was standing on the threshold of hell. He heard his name called.

"Captain Burke. Captain . . ." Jardin's square form materialized out of the night.

"The boss colonel wants you, pronto. All of you, in fact." Without answering, they followed Jardin down into the command post. Rikeman was waiting impatiently.

"Get ready," he snapped. "We're moving out."

"Yes, sir." Burke made the acknowledgement with vast relief. The long wait was over. Trig grinned, but Chartain looked sober, his eyes grave and thoughtful.

A marine wearing sidearms burst through the door, stopped, saluted the colonel smartly and said:

"Major Drobinski, sir. My orders are to transport the colonel and his men to the pad immediately."

"Thank you, Major." Rikeman smiled faintly. "Landings?"

"Yes, sir, frogmen have come ashore en masse at two points we know of. We expect other landings."

"Thank you. We'd better get moving." Rikeman hesitated imperceptibly. "Any special loading orders?"

Major Drobinski looked startled, as if the colonel had anticipated something he was prepared to spring, and replied, "Yes, sir. You and the officers with you will ride the second troop truck. A jeep will follow, then another troop truck."

"Who's riding the jeep?"

"I am, sir. With Sergeants Kelly and Miguel."

"I see," Rikeman said thoughtfully. "Thank you, Major. You may lead the way."

"Yes, sir." Major Drobinski started toward the exit as if propelled by springs and the others hurriedly followed. Burke reached the plain and looked into the night, trying to adjust his eyes to the darkness. The trucks that sandwiched the jeep looked like formless giants. He heard subdued voices.

Jardin appeared out of the blackness. "Over here, sir," he said to Rikeman, pointing toward the lead truck. The colonel reached the truck and pulled himself over the tailgate; Burke followed Trig and Chartain, with Jardin grunting at his heels. The engine sputtered to life, chattering for a few seconds before falling into a steady roar; the truck began to move, bouncing a little as its wheels struck ruts in the road. Someone behind Burke spoke:

"Sir, my orders are to see that the colonel and his men hug the deck—flat." The speaker paused for a moment before adding, "I am Second Lieutenant Bridgeford, sir."

"Very well, Lieutenant." Rikeman dropped to the floor of the truck and the others followed. Burke managed to keep his head near the tailgate. Two marines flanked him on either side, kneeling on the floorboards with submachine guns cradled in their arms. Rikeman next to him said grimly, "It'll be a relief to get away, eh?"

"Yes, sir," Burke replied without conviction. He raised his head slightly until his eyes cleared the level of the tailgate. The jeep was a small shadow some hundred feet behind them; beyond was the larger, noisier shadow of the rear truck. This was not the way he had pictured man's first venture into space; there should be newscasters, TV cameramen, final interviews.

Captain, Burke, would you like to say a few words about how you feel for your audience? Just face the camera and . . .

He grinned foolishly and stifled the thought. If he told them how he felt he'd be cut from the air. He looked again at the dark shadows trailing them. Mites in the great black night. He tried to relax, listening to the truck wheels rumble beneath him. The sound was hypnotic, almost soothing.

A blast of gunfire shattered the darkness, shattered his thoughts. He involuntarily winced and instinctively dropped his head, hugging the floorboard. The iron ribbing was hard against his cheek. The marines flanking him threw their weapons up and poured fire toward the side of the road as the truck lurched crazily. One of the vehicles behind screeched to a halt; a loud blast followed by a thunderous concussion threw him hard against Rikeman. He caught his breath and managed to raise his head. The night was alive with a greenish glare. The jeep was flying through the air; it spun crazily before crashing back onto the road upside down. Figures scrambled from the last truck and fanned toward the side of the road with weapons blazing.

An odd whooshing sound came from overhead. Chopper, he thought. The crouched marines, the mesquite, the stalled truck and overturned jeep were painted against the black background like some demented artist's nightmarish picture. The copter swung lower, hovered, and a series of blasts shook the earth. Someone in the chopper tossing eggs, he thought. How fantastic could it get? Suddenly flame licked from the 'copter; it started slipping sideways, a tongue of red shot skyward and an instant later it slammed blazing into the ground. WHAM! WHAM! WHAM! The road, the field, the sky blazed orange, then red; another greenish flare washed the area, giving it a strange odd illumination of another world.

The truck wheeled around a curve and threw Burke hard against Rikeman. He felt it pick up speed, careening from side to side before it settled into a straight run. Burke gave a sigh of relief, feeling the tension ebb from his body. The breeze against his shirt gave him the cold shivers and for the first time he discovered he was wet with perspiration. The colonel spoke softly from the darkness beside him:

"Major Drobinski was a brave man; he and the men with him."

"Yes, brave," Burke replied. The colonel didn't have to elucidate. The pattern was clear. Drobinski, a trained guerrilla fighter, had anticipated attack by the frogmen. The jeep had been a decoy—a clay pigeon between the trucks—to draw fire. And Drobinski rode the decoy—rode it to his death. He felt the truck slowing, turning, then gradually come to a stop as he pondered the thought.

"Ready, Lieutenant?"

"Yes, sir."

"Then let's go," Rikeman snapped. He pulled himself to his feet and leaped to the ground with Burke right behind him.

The *Argus* was crouched in its cave, its great girth and clustered booster rockets giving it a squat ugly appearance despite its height. The skeletal gantry had been rolled back, but a single slender extension ladder still reached to the high space cabin. The area around the base was a scene of feverish activity; workers and armed marines and odd bits of machinery created a strange picture under the cavern's milky lights.

Burke glanced at his watch. Three fifty-six and blastoff was scheduled for four fifty-seven a.m. Over two hours since he had awakened. Two hours during which a minor war had been fought . . . *was being fought,* he mentally corrected. During that time men had died—many men—and, he had no doubt, more would die during this last short hour before blastoff. A hidden wall-speaker boomed to life.

"*Minus sixty minutes . . .*"

It took a moment before the words struck home. The countdown! Sixty minutes before the *Argus* blasted clear. Everything that happened between now and then would be governed by the countdown. At each given moment a precise operation would occur . . . had been occurring. The entire operation was pegged to a master time schedule in which each minute, each second, was accounted for. Rikeman turned toward him, holding his mike, and his face had a glassy look.

"Situation's getting rough," he said tersely. "The central command post is under guerrilla attack. Captain Grayling is commanding the defenses . . . what there are of them." He looked anxiously at the *Argus* for a moment before he resumed speaking. "Enemy frog patrols—demolition squads—are all over the island."

Trig came up just in time to catch the last part of the conversation. "Looks like we're going to have a merry time," he said drily.

"Amen."

While they were talking, Jardin came up with a small handcart containing their personal equipment. Trig and Chartain sprang to help prepare the gear for donning, as if by doing so they could ease their anxiety. Burke watched their actions. I'm not the only one worried, he thought. The voice over the speaker continued to toll off the minutes. He fidgeted, feeling the nervousness breaking over him like waves, while he tried to rehearse the role he was to play.

The minutes fairly seemed to fly, yet nothing happened, if one discounted all the activity in the cavern. He worried about it. Was everything set—the *Argus* ready? He glanced at Rikeman; his face was taut, gray—even worried—but decisive; the face of a man who knew what he was doing. Burke marveled again at the iron in his superior officer's fragile body and mind. At that moment the colonel swung toward him.

"Two companies of marines landed on the west beach five minutes ago. They're fanning out across the island." He smiled grimly. "The Navy's up to its neck, too. An ASW plane scratched a sub in the middle of the channel and the *Menhaden*—that's one of the new anti-sub subs—got another big one that had surfaced to launch a box."

"We ought to be getting out of here while we can," Burke snapped impatiently.

Rikeman eyed him woodenly. "Everything moves by schedule." He glanced at the wall chrono and added, "Better get into your suits."

"Yes, sir," Burke responded, relieved by the order. He turned and signaled his companions, who were still working with Jardin.

"Time?" Trig asked, sounding anxious. Burke nodded.

While the missile sergeant helped the others into their suits, Burke checked their gear and gave a last-minute look at their oxygen connections and intercom systems. Satisfied everything was all right, he turned his attention to his own suit. Even uninflated it was heavy, cumbersome, and made body movement difficult. He finished donning it and flexed his arms and wrists and stamped his feet, grimacing at the effort. He tried to turn his head and found that the helmet restricted full movement. He thought wryly that any movement at all would be extremely difficult once the suit was inflated.

"Minus forty minutes . . ."

Rikeman glanced at him and nodded. Burke held two gloved fingers up in a V-gesture and turned toward Trig and Chartain.

"Time to go," he said briefly.

"The Navy's off to conquer space," Trig retorted cockily. He moved to the long ladder and started up first, climbing slowly, carefully, testing each step before taking the next one.

Burke impatiently watched, feeling a twinge of nervousness and wondered if his companions felt the same. He looked at the chronometer and smiled grimly. Trig finally reached the cabin and disappeared through the hatch without looking down. Chartain began the ascent. The doctor climbed with awkward movements, controlling his body with difficulty. He stopped several times as if to catch his breath, clinging tightly to the rungs. Burke was sweating profusely before his lank body, ludicrous in the heavy suit, finally disappeared through the hatch opening.

Burke took a last look around and thought: This is it. He caught Jardin's eye and winked. The missile sergeant smiled broadly, and lifted a hand in a gesture of luck. Rikeman was standing off to one side talking into his mike, holding it tight against his lips. Burke looked around. Faces—a sea of faces, white under the glaring lights. The murmur of hurried voices and clank of machinery filled the huge cavern. He thought again it looked like a scene from hell and turned to the ladder, climbing slowly and laboriously, conscious of the weight and stiffness of the space suit. And conscious, too, that his heart was beating a fast tattoo and his breath came overly fast. The ladder bent slightly under his weight and swayed uncertainly, giving him a momentary feeling of vertigo. He stopped and waited for his head to clear, looking down while he did so. A ring of faces like small pasty blobs were turned upward, watching him. He was breathing heavily and perspiring freely by the time he finally gained the top. He paused to look down before entering the cabin. Jardin's face was a square toothy splotch staring up at him. He gave a brief wave and stepped through the hatch, closing and securing it behind him. Trig wore a silly smile but the doctor appeared grave, concerned. Burke ordered them to make a last-minute check of their equipment and switched on the intercom, giving the tubes a moment to warm before flipping a switch and lifting the mike to his lips.

"Testing . . . testing. *Argus* to Command. Testing . . ."

"Read you loud and clear," Rikeman acknowledged in a terse brittle voice. Burke finished testing and gave a last minute check of the instrument panel—not that he would need it for a while, he thought. He would be just a passenger on the way up, just so much cargo hoisted into the sky at the cost of tremendous amounts of fuel. He would be helpless, strapped to his acceleration pad, unable to move as much as a finger. Getting the *Argus* into orbit was the job of ground control—putting into action of computations long since worked out by great batteries of mechanical brains. His job would commence afterward, when they were in orbit. Everything up to that point depended upon the reliability of the rocket's tens of thousands of components. He saw Chartain watching him expectantly.

"We'll stay out of the pads as long as possible," Burke instructed. His voice boomed loudly in his ears.

"Minus twenty minutes . . ."

He glanced at the chronometer. Twelve thirty-seven p.m. Greenwich Mean Time, eight hours later than time on the island. He sucked his lip nervously. Twenty minutes since Trig had started up the ladder. It seemed more like five. Rikeman came on the phones speaking in a clipped voice:

"We're going to position you."

"Affirmative." Burke felt the nervousness again. He looked out the small forward port, scrunching his head to see upward. The ceiling of the cavern was just a few feet above the *Argus'* nose. A low whirring sound was transmitted through his earphones from the cavern floor. He sensed the other men at his shoulder and shifted his body slightly to give them room. No one spoke. Suddenly he saw a small winking light overhead. It took him a second to identify it as a star, then a narrow strip of pale starfield which gradually widened. Slowly the great shallow-domed roof of the cavern parted until the whole of the heavens spread before his eyes, the faint suggestion of stars bathed by the dawn light. It reminded him of the Palomar Observatory. There was a louder whirring and he looked down. The floor of the cavern was gradually receding, but he felt no motion. The rocket moved upward so slowly that it was several minutes before the platform upon which its tailfins rested reached ground level and locked into place. The whirring stopped and started again as huge hydraulic pylons moved upward to support the base of the pad. At the same time giant metal crossbeams moved out from the walls below ground level and locked horizontally beneath the rocket's supporting structure, leaving it as solid as the earth itself, except for a tunnel behind the nozzles to funnel the raging exhaust gases. Burke flicked his eyes over the island. There were several small red glares and a larger one in the direction of the command post they had evacuated. He momentarily wondered how Captain Grayling had made out.

"You're positioned, Burke." Rikeman's voice was taut.

"Affirmative." He moved his body to relieve the strain he felt and glanced at Trig, deciding his lopsided grin was a mask to cover his fears. Chartain looked frankly apprehensive.

Minus ten minutes . . ."

Burke looked out the forward port to the east. The sun was just below the horizon, its red rays fanning upward and glowing against the light haze covering the sea. Stars were winking out. The light in the east came up like thunder, washing the world, chasing the night into the west. He turned and nodded to Trig, who immediately lowered the acceleration pads into position, leaving but scant room in which to stand. Chartain looked solemnly at Burke while he fitted his body against one of the pads; Trig helped him tighten his harnessing before turning to his own acceleration couch. Burke waited, nervously watching the chronometer while UDT man positioned himself, working with quick, easy movements. He finished and looked up at Burke.

"Comfortable," he drawled laconically.

"Minus five minutes . . ."

The sun leaped clear of the low mist banks, blazing in the sky, an unbearable torch. Burke swung his eyes northwest. A thin pillar of smoke rose from the area of the main command post, drifting lazily up to high altitude before being dissipated in the dawn breeze. Time seemed suspended. A new voice broke into his earphones.

"Colonel Rikeman has moved into the control bunkers."

"Affirmative."

A second voice cut in: *"Minus three minutes."*

Burke took a last look at the ground. The marines guarding the area were . . .

He froze, at the same instant hearing the chattering of gunfire. Marines near the edge of the clearing were racing into the brush, firing, moving in low, fast, half-crouched. One figure twisted violently and pitched to the ground. A small 'copter darted into his field of view, hovering above the *Argus,* its huge blades bitting into the air. Rikeman's voice cut in, harsh and grating:

"Are you ready?"

"A second," Burke blurted.

"Damnit, we've got a schedule. Get on the ball!" Burke dropped to his pad and hurriedly buckled his harnessing.

"Minus two minutes . . ."

He fumbled, feeling all fingers. Slow down, he told himself. A violent trembling seized him and he had difficulty controlling his fingers. Chartain sensed his trouble.

"Take it easy," he advised. His voice, a laconic drawl, eased Burke's tensions. He snapped the last buckle and tested his body against the straps; there was no give.

"Minus one minute . . ."

One minute to go. One minute to eternity with the pad under attack. One minute to eternity with the pad under attack. One minute until the *Argus* roused itself from its lethargy and thundered into the skies. He hurriedly hooked the free oxygen line into his suit and turned the valve to feed pressure into the anti-g bladders to prevent the pooling of body blood during the high g accelerations to come. His fingers trembled, feeling like thumbs. A faint voice came through the phones.

"Sir, a box has broken through!"

Box! Someone was telling Rikeman that a box was coming in. He sweated, trying to stifle his pounding heart and hear through the cacophonous noise. The gunfire had become a din drumming up from the clearing.

"Minus thirty seconds . . ."

There was a jumble of voices. He caught the words "box" and *"Argus,"* heard harsh commands shouted in the distance. A louder voice said:

"Minus ten seconds."

The faint voice again. ". . . Try to crash the *Argus,* sir, Kamikaze-like . . ." The words trailed away and Burke swallowed convulsively, feeling his muscles tighten until his body was a hard knot. A box was coming down in a death-dive. Helluva way to die, strapped helplessly to an acceleration pad. He strained against the harnessing.

"Minus five seconds . . ."

"Ready, Burke?" Rikeman's voice was imperative.

"Affirmative," Burke shouted hoarsely.

"Minus . . ."

"Good luck, Burke, Trig, Chartain . . ."

A hysterical cry: "Colonel, for God's sake, he's going to crash it!"

"Minus one . . ."

Thunder, vibration, a hellish roar. The world collapsed in an unbelievable spectrum of thunder. The *Argus* shook, danced, swayed, vibrated with sickening intensity. Burke felt a wave of terror and gritted his teeth to suppress his panic. Yellow smoke swirled up past the viewports; smoke and thunder and the cabin dancing with a vertiginous motion that threatened to shake it apart. Driving energies tore his body, screamed in his ears, raked him with merciless talons. A shaking, vibration, thunder. He closed his eyes, closed his eyes and mind. Crash or take-off, a little voice in his brain pleaded to know. Crash or take-off? The question was a shriek in his mind.

CHAPTER 7

THE PRESSURE CAME. An increasing force pinned Burke's body against the acceleration pad and he gasped, strained his muscles and tried to fight the onslaught of weight. Pressure, noise—the horrible, jarring noise of auditory patterns gone wild, a harsh, screaming, jangled crescendo that became a pain in his ears. His throat muscles tightened and he fought for breath, trying to draw oxygen into his tortured lungs. Fear swept him, fear that became an icy panic. He was well acquainted with g forces. Fighter pilots lived with them—the push or pull of gravity with every acceleration. Tight turns that threw the blood and guts toward the outside of the turn—forces that dimmed vision, filled the sinuses with hot pain, wracked the body unmercifully, pooled the body blood until unconsciousness came. But it had never been like this.

He strained and grunted—the pilot's M-maneuver to increase tolerance to the dread accelerative forces. Pressure, pressure, growing until his body was a tortured mass of pain. Lungs flattened against the rib case, bones strained to the snapping point, muscles being torn apart. His brain fought for relief. The helplessness of being strapped to the pad increased his panic. Up, up and still the terrible wracking pressure increased. Oh God, how long?

Thunder came through the walls of the cabin, the harsh thunder of tremendous rocket motors driving the *Argus* through the troposhere—the whoosh of hot gases roaring from the stern tubes. Thunder and pressure were inseparable. He gritted his teeth, and the thought came to him that it hadn't been a bomb after all. The box had missed . . . missed. Now they were being hurled into the depths of space, into the vacuum of nothingness, blasted into the sky with almost unendurable agony. His eyes were hot coals in his face. The pressure pinning him against the pad grew worse, almost unbearable, intolerable, until it seemed he would break. He gritted his teeth, cramping his jaw muscles to suppress the pain. He tried to turn his head toward Trig and failed. He couldn't budge. He was helpless, helpless . . . After a second he stopped trying.

Up . . . up, driving through the earth's weather belt, piercing the stratosphere where strange mother-of-pearl clouds drifted over the distant earth and the jet streams rushed. But he couldn't see, couldn't see. He was helpless, blindly rushing away from the earth at awesome speed. Behind him the inferno of exhaust gases seared the sky, driving the ship ever faster. How much time had passed? Ten seconds? A minute? Two minutes? He tried to tell himself that the most critical part of the escape was over. Rockets that made the top of the stratosphere without exploding or going wild had it made. Except those that failed to slant into orbit. Rockets had shot straight up . . . had come straight down, incinerating in the hellish heat of friction generated during passage through the atmosphere. The roaring became a steady thunder growing fainter, and the vibration seemed to have slackened off somewhat. The pain in his ears subsided but his sinuses and chest were hot with fire, with pressure, with pain. He tried to straighten his tangled thoughts, suppress his panic. Now he'd be in the chemosphere, nature's vast photochemical laboratory where the sun's ultra-violet rays were processed, creating fields of seething ions.

Brennschluss—burnout. The tearing noise and hellish thunder died and the pressure lifted from his chest. He lay weak and gasping, struggling to draw cool oxygen into his tortured lungs, thinking that the *Argus* was hurtling through the upper chemosphere, driven by the inertial forces generated in the powerful stage one engines. But they were dead, now. Somewhere behind him servo-controlled detonators exploded, pushing the dead first stage free. It would separate, fall away in a vast trajectory and plunge to fiery death in the stratosphere. He swiveled his head sideways. Trig's body lay straight, rigid against his pad. He looked to the other side; Chartain was an inert figure.

The roaring came again, came with a suddenness that made him gasp. Nearer, closer, not quite so deafening, nor was the pain as intolerable. Blood rushed to his head. His guts moved upward, pushing against his diaphragm as servomechanisms kicked the rocket into a gentle slant, moving away from the vertical. He had the sense of going blind and his head throbbed as if it would explode. His skull felt as if it were alternately expanding and shrinking; his sinuses and ears were burning again. They must be high, high, near the top of the ionosphere whose seething ions gave birth to the great electromagnetic fields encompassing the earth. High, high above the continents and seas. He gritted his teeth to still his fear. Claustrophobia! There was something frightening about being hurled into space while chained to a couch in a small casket. He would die there, die in a man-made coffin now being fantastically shot into space. No —he would live, live. He forced the belief into his reluctant mind. He would live to conquer space!

Outside the atmospheric pressure was less than one-millionth that of sea level, too minute to measure. An atmosphere of lonely atoms, an almost perfect vacuum, too tenuous to transmit sound. The only noise was that coming through the rear wall of the cabin. Only the cabin could support life. He strained his head to one side. Trig's body in his heavy suit appeared absolutely rigid, immobile. Dead! He immediately rejected the appalling thought. Trig was going through hell, suffering the torments of the damned, wracked and suffering just as he was. Perhaps he was praying . . . cursing, but he lived. Chartain lived, too. They had to. They couldn't leave him now, alone, all by himself in the universe. Yes—they were alive, alive. He tried to turn his head and failed.

Brennschluss again. The silence returned, a vast deathless silence in which the beat of the heart in the ear was a booming thunder. Space was a cathedral of stillness, a timeless tomb void of any medium capable of carrying sound waves. A nerve twitched in his face and he felt weak, sweaty, and his jaws ached from cording them. The roar came again, came in the form of vibration patterns transmitted through the rear bulkhead, patterns that tingled the ear and produced a humming sensation. The pressure returned, a sense of being flattened against the pad, but a force mild compared with the accelerations which had accompanied the first two stages.

It wasn't bad, he thought. Not bad at all. He flexed his body experimentally, wriggled his toes and exerted his arm muscles against the restraining harnessing, surprised to find himself intact. He was sore, aching, but all in one piece, even though his belly muscles were knotted into a painful ball and his head throbbed. Gradually his eyes cleared and details of the cabin came into sharper focus. Steering rocket controls . . . scopes . . . thermocouple and acceleration gages, the forward and side viewports took sharp form. The details of the cabin steadied, jelled until the last of the dancing motion left his eyes.

They were high . . . high, he thought, near the very top of the air ocean. The exosphere—where atmosphere and space merged. They would be moving into orbit now . . . if all the servos functioned. The vibration of the engine through the rear bulkhead grew fainter, died, and the silence came again. The final silence, almost unbearable. He struggled to hear sound in the awful stillness. *Thump . . . thump . . . thump.* No, that was his heart. The nerve in his face twitched again; he fancied he could hear it. For a fleeting moment he felt the touch of doom. They were, he knew, in space—but where? It seemed inconceivable that the *Argus* could be riding in precisely the small brief cube in the heavens which had been its target. The wings of thrust had pushed it free of the earth, had slanted it into orbit, a sum of motions incredible in its precision. He tried to shake the feeling. A voice boomed in his ears.

"We made it."

It took him a few seconds to recognize it as belonging to George Trig. Relief flooded over him.

"Sure," he grunted, "what did you expect?"

Space. The Big Vacuum. Burke felt the stillness inside him as he absorbed the impact of their accomplishment. The wracking pain, the thunder in the ears, the panic—all were gone. Now was sweet victory. The big step that all mankind harbored as a secret dream had come to pass. Man had burst his bonds, struggled free of the gravity chains and was on his way. He became conscious of the utter stillness again. Space, he thought, is tranquil. It fitted the pictures Trig had described of the sea bottoms. Chartain broke the silence. His words were not historical.

"Let's get off these ironing boards," he pleaded.

"Amen," Trig put in, "I feel like I've been through a wringer."

Burke laughed softly—a laugh of sheer relief—and released the pressure from his anti-g bladders and began unbuckling his harnessing. His fingers missed their target on the first attempt and he made awkward corrective movements. Strange, his arms seemed oddly light, somehow unmanageable. What's wrong, he worried. What's happened? His nerves drew up taut.

"Weightlessness," Chartain observed professionally, watching his attempts with interest. "We'll have to be pretty careful for a while . . . until we learn to adjust to the zero g state."

"Guinea pigs," Burke grunted.

"Human guinea pigs. That's right. But at least we can be cautious guinea pigs," Chartain advised wryly.

Burke was considering his advice when Trig gave a startled shout. He turned just in time to see the UDT man's body bounce off a bulkhead in a weird slow-motion effect.

His arms flopped lugubriously in a wild attempt to find a secure hold; his face held a foolish yet frantic look.

"Just as I warned you," Chartain mocked, "a clown. He should have been listening."

Trig managed to anchor himself. "Clean forgot about weightlessness," he apologized. "All I did was take a step."

"Relax for a moment until you get the feel of it," Chartain advised. "We can't afford to be smashing the instruments."

Burke managed to unsnap the last buckle holding him to the pad and lay quiet, giving himself time to adjust to the strange floating sensation. It felt as if all his pressure receptors were dead and all sense of feeling gone. He briefly studied his surroundings while he waited. He knew every inch of the cabin but now, in space, everything seemed different somehow. The cabin resembled a hollow cylinder whose cross-section diameter was barely sufficient to stand erect in. One side—theoretically the bottom—had flat flooring to make movement easier, or to provide support for the ship's equipment. He wasn't sure which. Up forward were the instrument panels, controls and black box housing the *Argus'* brain—an automatic pilot to bring the ship onto the course imprinted in its memory banks. The brain constantly compared the ship's course with the precalculated course imbedded in the memory cells; when deviations occurred, automatic signals caused the autopilot to make the necessary corrections.

He was caught by the wonder of it, and by the magnitude of man's ingenuity. Far back on earth—another time, another place—the computers had plotted their path through space. The complex machines had considered their starting point, time, the earth's rotation, gravity, perturbations due to the earth's oblate shape, the precise point in space where the *Argus* would be at any given instant of time—these and dozens of other variables. Now the brain was following that path, steering the *Argus* unerringly through the black, endless pit of the universe, whirling it around its earth primary like a stone whirled on the end of a string.

He was struck by how small the cabin appeared. Yeah, they'd be cramped, but not for long. Less than a single day—if everything went okay. Thirteen revolutions around the earth—fifteen at most if the schedule got shot—during which time every major center of population would spin under their feet. Less than twenty-four hours in space; then back to the old hay bin; back to Laura. The heroes come home.

He grinned and took an experimental step, almost pitching uncontrollably forward, before he caught his balance.

"Ha, another clown," Trig jibed. "I'm not alone in my folly. It's not as simple as it looks, huh?"

Burke suppressed a grin and carefully made his way toward the forward port. To do it had to touch his feet to the deck and exert pressure backward, being careful to keep from pitching toward the deck. His body, he discovered, was like a lever arm, acting from force applied at the spot where his feet touched the deck. He cautiously neared the forward port, conscious that the others were close behind him. Reaching the control panel, he carefully steadied himself, then pressed several buttons. Somewhere a servomechanism came to life with a low hum. On the outside of the hull a radar scan elevated into position and a radio antenna emerged from a recessed well shaft and locked into position.

"The air fan," Chartain reminded. He scanned the control panel, then jabbed a third button and a low hum broke the stillness.

"Fan—all the comfort of home," Trig jibed.

"Without it you'd build up a sphere of carbon dioxide around you from your own breath—a quick, easy way of departing this planet," Chartain observed.

Burke glanced at Trig and Chartain—their faces were expectant—and turned a knob dimming the cabin lights, then swung toward the viewport.

The earth was gigantic, overwhelming, a tremendous curved plane falling away in all directions; its far horizons formed a huge, light-reflecting arc against the ebony sky and, off to one side, the edge of night was still visible. Above the universe was black with an eerie tinge of purple, a strange soft darkness strewn with stars of unbelievable brightness, a field sparkling with steady lights stretching to infinity. Yellows and blues and baleful reds. Incongruously the sun was a hard, brilliant metallic circle hung against a star-speckled wall of black—a sun without rays, with stars shining at its very edge, yet a sun absolutely intolerable to the eye. They stared in silence for a long minute before Trig spoke, his voice almost reverent.

"It's as beautiful as the green sea-bottoms," he said simply.

Burke nodded without speaking, and searched the magnificent scene below them more thoroughly. On one side the curved plane of the Pacific was broken by great cloud masses, their ragged formations smoothed by distance until they resembled milky sheets cast upon the surface of the waters. Closer up he sighted patches of green—emerald and olive and aquamarines—and the occasional glint of a sun-struck ocean. Off in the west, night clamped its grip over the earth, sprawling on the cloud-covered sea like a brooding giant. He glanced at the chronometer. They were already on the quarter turn, hurtling into the southeast toward the edge of the Antarctic Circle. He searched through the port, looking downward. The tip of South America was etched against the earth, the Strait of Magellan, Tierra del Fuego—Land of Fire—looked toward the Sea of Ice. Veils of cloud shrouded a large portion of the globe so that what they saw was largely fragmentary—the earth pieces of some fanciful jig-saw puzzle. He gazed downward with mingled feelings of awe.

Finally Trig spoke. "Altitude 350 miles and somewhat over a quarter of the way through turn one. Man, that's moving."

"The servos were supposed to project us into an almost circular orbit," Burke soberly reflected. "We should circle the earth in around ninety-six minutes, if everything went right." He looked wonderingly at the others.

"They said we would, but I never quite believed them."

"It sounded pretty incredible to me, too," Chartain admitted. "It takes time to adjust, to realize that the cold figures of the computers have been translated into reality."

"All at once I feel giddy. Just plain dizzy," Trig said.

"So do I," the doctor replied. "Disorientation, but you'll get used to it," he encouraged. "It's probably related to weightlessness."

Burke idly listened to their chatter, conscious that his elation was slipping away. For some unaccountable reason he was feeling mellow—not mellow, but moody, he decided. He turned the light level up and sat in the pilot's seat.

"How come the squawk box's not chattering?" Trig suddenly asked. "You'd think they'd be hot to establish contact with us." Burke detected a tinge of nervousness in his voice.

"They are . . . only they don't know we made it yet," he answered. He saw Trig's puzzled look and hastened to explain.

"They won't know for certain if we're in orbit until we pass over one of the tracking stations. In the meantime, ionized atoms and molecules in the ionosphere keep us from establishing radio contact."

"Then how. . . ?"

"Windows in the ionosphere," Burke interjected patiently. "When we come within range of one of the stations, the microwave radion will go right through instead of reflecting off the ionized layers."

"Sounds okay," Trig said dubiously, "but I'll feel better when I hear human voices again. Even Rikeman's."

"We won't be cut off long. The Navy's set up a whole network of ocean stations, plus all the Air Force trackers."

Burke dimmed the panel lights and stared moodily at the earth. The bottom of the globe was spinning by, shrouded in deep unbroken cloud layers. He stared at the scene while mentally assessing his reactions to their accomplishment. Strange, he worried, he should feel elated, like a conquering hero. He'd just assured his niche in history. He had it cinched, like Columbus. But instead he was depressed, an almost morbid feeling. Too many worries nagging at him, he thought. Yet, it was more than that. It was a strange resigned feeling—like a man for whom life was ending, a man looking into the shadows. He tried to shake the feeling and failed. He sighed, turned up the panel lights and began helping Chartain check the instruments.

The maintenance of proper atmosphere was the doctor's special province, that and the health of the crew. He monitored the oxygen, saw that carbon dioxide and water vapor from respiration were kept below critical levels, and that cabin air was kept free of toxic trace gases. But his prime responsibility—and the real reason for his inclusion in the crew—was to assess man's adaptability to space. Burke's job included handling communications, navigating the *Argus* through the black space lanes seeking out the enemy satellites and, more important, fulfilling the responsibilities of command. Command—the making of decisions. He was the final arbiter of their fate. Success or failure—the rise or fall of nations—could depend upon his decisions. Finally, when the job was finished, he had the responsibility of returning them to earth in the *Moth,* the untested rocket-glider combination that Rikeman proposed to shoot into orbit to intercept the dying *Argus.* Had better shoot into orbit, he mentally corrected. If it got into orbit. And if it did, if they managed to locate it with the scant fuel and power they would possess. If . . . if . . . if. Their lives hung on a slender "if." The moodiness persisted and he abruptly turned to the port, staring at the fantastic ball underfoot.

The gleam of the ice fields, like far-away panes of glass in the sunlight, had already receded. They were zooming up over the Indian Ocean, racing toward the line of dusk, streaking over a world spattered by clouds, a world which basked half in daylight, half in night. He glanced at the chronometer. Nearly fifty minutes since blastoff. About halfway around the world, he thought. Madagascar sprawled over the water in the shape of an inverted, winged foot, and beyond the Mozambique Channel, the East Coast of Africa rolled like a shroud to the far horizons. Dusk on the Indian Ocean. He watched silently, feeling depressed. Night and day. The earth below seemed a grotesque caricature of the world he had come from less than an hour before. There was something terribly alien about looking down upon it—upon all mankind like some malevolent god.

The squawk box came to life with startling suddenness and he automatically swung toward the instrument panel, almost losing his balance in the process. Static. The garbled voice of radio waves distorted by seething masses of ions. Static—rising and falling, almost fading to nothingness before giving way to a faint high-pitched voice.

". . . *Argus.* Calling *Argus.* Come in, *Argus* . . ."

Burke cursed to himself while he hurriedly checked his estimated position, then ran his finger down the list of tracking stations fitted into a slot at one side of the panel. Yeah, it was there. He positioned his mike and flicked a switch, thinking that in the future he would have to anticipate the trackers ahead of time. He spoke clearly, trying to keep his voice steady.

"I read you. Please identify." He purposefully withheld naming the tracker's identity, an insurance Rikeman had suggested.

The voice became garbled again, but he managed to catch a single phrase: ". . . Float Boy India . . ."

Check, he thought. Float Boy India was one of the Navy trackers down there on the dark-masked Indian Ocean. He gave a silent prayer of thanks while he responded:

"*Argus* to Float Boy India. Come in, Float Boy India."

The faint voice blended with the static and took on a high whine punctuated by a crackling which gradually died away to an almost overwhelming silence. The whir of the air circulation fan seemed almost harsh by contrast. He tried to contact the speaker for several minutes before giving up and turning to his companions.

Trig was grinning. "At least they know we're here. That's something."

"Amen," Burke replied with feeling, "it does something for your morale."

"A shot we sadly needed," Chartain observed.

"Good old Navy, always rescuing the Air Force," Trig said gleefully.

Burke smiled dutifully and turned back to the viewport. Yes, it did something for his morale. Just the fact that a voice had come through had severed the deadly feeling of isolation —they weren't alone. They were tied to the earth; tied by a faint electromagnetic chain, tenuous and uncertain though it be.

Trig broke the silence. "Strange, I'd been thinking of this as a pretty hairy ride, even after getting into orbit. But look—no noise, no sense of motion, no stress. It's as peaceful as the bottom of an atoll lagoon." He turned toward the viewport and wonder filled his eyes. "It looks so calm out there. It's difficult to imagine that death lies so few feet away."

Burke started to reply when he caught Chartain's eyes fastened on Trig. They were quizzical, weighing. Finally he said:

"It's a pretty close parallel to your UDT work. It's fairly calm and peaceful under the sea, too, but death lies just on the other side of your oxygen mask. The problems of space and sea are somewhat the same: pressure, orientation, oxygen. I'm not surprised you find a certain kinship with space."

Trig thought it over. "I suppose so, only I've never thought of the sea as particularly dangerous. I guess it's what you get used to."

"That's about it," Chartain agreed. Burke listened without comment, thinking that Trig was using the conversation to get rid of some of the pressures. There was an undertone of uncertainty in his voice; fears he couldn't admit.

Burke turned desultorily toward the opposite viewport with an odd feeling of relief. There was some comfort in knowing he wasn't alone in the vague fears that had been plaguing him. The constant waiting for the unknown—that was hard to take. He fell to studying the sky. Vast . . . vast. All the familiar stars and constellations were there, and tens of thousands more. Stars magnified until even the lowliest light among them shone in the endless night like a beacon, a milestone in infinity.

He peered downward. Blackness. An awful black shadow that obscured the universe, but gray at the edges where the dawn line rode. Below the velvet night was measurable in minutes. Their orbit had been plotted so that the *Argus* would pass the greater part of each revolution in sun—a dawn-noon-dusk orbit with just one part of each circuit above a night-gripped world. He chalked their passage by chronometer: India . . . the China Highlands . . . the slant into Siberia. He made a rapid calculation and waited. Now they'd be breaking space somewhere above Irkutsk . . . the Cherski Mountains . . . rushing over a bleak and forbidding land. Bleak, except it was dotted with enemy missile-launching stations, a mysterious power-web that Intelligence had never quite managed to piece together. Enemy monitoring stations were watching them for perhaps the first time. Great saucers were staring out of Siberia—grotesque eyes charting their path, recording their flight in magical electronic wavetrains which were converted to precise figures. Figures which told the watchers exactly where they were, where they were going, the precise spot they would be at any given instant of time. He recalled the rumors he had heard about the enemy's anti-satellite missile and grinned wolfishly. Pretty quick he'd be able to separate rumor from fact. The grin departed as the implication of the saucers came home. He didn't like the idea of the magic eyes below—didn't like it at all. For a man who didn't like enemy missiles he would be passing over a lot of bases, he thought wryly. Komsomolsk, Anadyr, Severnaya Zemiya, Taimyr and probably plenty of others he'd never heard of, missile bases that represented the enemy's total power complex. He looked down at the dark land wheeling below and the moodiness returned, stronger this time. All at once his task seemed insurmountable.

CHAPTER 8

THEY CAME DOWN over Khrebet Cherskogo, cut Poluostrov Kamchatka, across the Bering Sea and past the tip of the Alaskan Peninsula. Ahead lay the dark green of the ocean masked by splotches of white cloud, and landfall—a smoky blur on the horizon.

Far below SMEWS—Space Missile Early Warning System—had them in its radar scan, Burke knew. Great toroid section reflectors over three hundred feet high were picking them out of the vastness of space and feeding a steady stream of data to the hungry computers. Plots, extrapolations, predictions—their flight path would be charted with unerring accuracy. Somewhere down there Rikeman was watching the data roll in, chewing a fat cigar, assessing his next move. If there was a Rikeman! If a box hadn't crashed the dugout, destroyed the men and equipment which had put them into orbit—if *Moth* remained intact!

In a matter of moments they'd hurtle over the thirty-third parallel north to start turn two. They'd cross it at 2:36 p.m. Greenwich Mean time, but it would be dawn below; only the earth would have rotated through twenty-four degrees during the ninety-six minutes it would take them to circle it. They would complete turn one around longitude 144 west. They had hurtled down one side of the earth going southeast, had come up the other side northeast, and now they were on the southeast leg again. During the successive circuits of the globe they would criss-cross almost every major civilized place on earth.

The clouds over the Pacific floated in scattered drifts giving glimpses of dark-green canyons beneath. Navy seaborne trackers would pick them up, give them the word, tell them where the enemy's *Spy Eye* was—give the order that would commit them to leaving the comparative safety of the space cabin to sled through the bottomless night. He turned from the port, urged by the necessity of action.

Chartain was speaking into the recorder, taping and packaging his words for automatic release in a single burst of energy over the tracker to conserve power output. He watched the space doctor with interest. The latter was reading oxygen consumption, carbon dioxide content and humidity figures into the tape. He spoke a few words about weightlessness and added:

"No apparent cardiovascular disturbances."

Nice, Burke thought. At least he didn't have to worry about his heart folding. A moment later, however, he pricked up his ears. Chartain was saying something about mental depression, moodiness. Burke waited until he was finished and snapped, "What the hell was that about?"

"Report on our well-being," Chartain replied cheerfully.

"Where do you get that mental depression stuff?" Burke rasped. "They'll think they've got a bunch of schizos up here."

The doctor looked solemnly at him and weighed his words carefully. "I'm the medical monitor, Burke. My job is to report psychological as well as physiological reactions. If you haven't noticed it, you've been pretty damned moody since hitting orbit. We all have. It seems to be the prime initial reaction."

Burke started to protest but Chartain silenced him with a wave.

"Don't be touchy. It's exactly the reaction we expected. We're isolated, cut off from everything we've ever known.

Every cue and stimulus that we normally live by is down there"—he flicked his thumb earthward—"three hundred and fifty miles below us. We're in a completely alien environment and can't expect to react normally, at least not at first."

He bit his lip reflectively. "Perhaps depression is normal in space. I don't know. But I do know I have to report the facts."

"Well, maybe you're right," Burke conceded a bit sheepishly. "All I want is something to do—some action."

"That's what we all want." He glanced toward Trig and nodded his head significantly. Burke glanced toward the UDT man. He had swiveled his acceleration couch out and was lying on it or, Burke decided, floating on it would perhaps be a more apt description. His face was blank, his thoughts focused on some world far away. It was evident he hadn't heard a word they had said.

"See what I mean?" the doctor asked softly.

Burke grunted and turned back to the instrument panel. Maybe Chartain was right, but he didn't like to be considered wacky—not even if it were normal in space. Normally wacky. He grinned at the idea.

Turn two came up.

A burst of static rising and falling, a crescendo of crackling noises.

"WESCOP to *Argus* . . . WESCOP to *Argus* . . ."

The voice came in suddenly, sharp and clear above the static field. "WESCOP to *Argus*. Come in, *Argus* . . ."

WESCOP—Western Spacecomb Operations Post—another Navy, sea-borne setup. Burke leaped to the microphone with alacrity, almost overshooting his target. He cursed his clumsiness while managing to regain balance, then flipped a switch and held the mike to his lips. "*Argus* to WESCOP

. . . *Argus* to WESCOP. I read you loud and clear. Come in, WESCOP."

There was another burst of static before WESCOP was clear again. A calm voice said, "Congratulations . . . and one moment. We're tying you into the communication fan with Sandlot."

More static, harsh squawks and a new voice came on. Sandlot! It took Burke a moment to realize the import of WESCOP's message. Rikeman . . . it was Rikeman. He felt sudden relief. The old man was alive . . . down there running the show. The box had missed.

"Congratulations," the colonel began. "Nice blastoff. Right on the button and no complications. Now here's how we stand. You'd better tape it."

Burke reached over and flipped on the tape recorder. "Roger."

Rikeman began speaking. According to him the *Argus* had reached orbit almost precisely . . . almost. Altitude and speed were perfect and the orbit was minimally elliptical. He droned on, giving space coordinates, computations and finally directions. They would complete turn two, then on turn three, at a precise point over the Pacific, the Hawaii tracker would give a signal activating a light on their console. At that exact instant Burke would touch the power keys, would be on his own until the intercept with *Spy Eye* was made. His role was that of a robot, carrying out the calculations of the computers; but he had to be an accurate robot. He concentrated on the instructions, even though they were taped.

Rikeman finished speaking in a burst of static. WESCOP was already passing from under the narrow radio window in the ionosphere. Burke hurriedly asked, "What happened to the box?"

"Remember the helicopter hovering near you?" The colonel's voice was becoming faint, twisted by the raging ions through which it passed. "Unbelievable but the pilot managed to fly between you and . . ." The static came again, more intense, and his voice was lost. Burke stared thoughtfully at the microphone, then turned to the others.

"I'll start memorizing the tape. One more swing around that billiard ball down there and we get to work."

"Good, now we're back in the swing of things," Chartain answered. "From here on out we ought to enjoy it." He winked. Burke smiled and reached for the recorder. There was a lot to memorize . . . and no room for error. He went over the tapes several times until certain of their content, then snapped off the recorder and turned to help with the equipment. He was feeling better now.

They were on the quarter turn again, somewhere between Tierra del Fuego and the Antarctic Circle, only the surface of the earth was banked in clouds. He stood, watching for what seemed a long time before the first rift appeared. A canyon came up and he caught sight of land falling away to the sea and, just beyond, the line of night marching toward them. Once he glanced back. Trig had finished his chores and was reclining again, eyes closed, but Chartain was hunched over the recorder speaking in a low voice. Burke strained to hear.

"Carbon dioxide, 0.2 at 3:12 p.m. Greenwich clock. Relative humidity . . ."

He closed his mind to the recording and turned back to the port. Incongruously the earth was split between day and night. The Cape of Good Hope lay in the sunlight, and off to the right the Indian Ocean mated with the darkness over an earth that was a formless mass blotting out the stars. The firmament was a thing alive, gleaming multi-colored embers in the black coal-sack of space. He watched for what seemed a long time, but in reality was mere minutes;

watched, calculating their passage over the Kabul Highlands, over sprawling Siberia and past mysterious Omsk, the rumored site of a gigantic subterranean missile base. Occasionally he glanced at the chronometer, anxious to clear the borders of the enemy nation.

The radio suddenly rasped to life, startling him into momentary immobility. Trig and Chartain stood frozen, their faces questioning. Burke moved a hand toward the panel, turning up the volume, conscious that his heart was hammering. A faint clear voice came in above the noise spectrum.

"*Argus* . . . calling *Argus*. Come in, *Argus* . . ."

Burke looked questioningly at the other men. "Not one of ours," he said huskily. They nodded agreement, listening. The call was repeated several times before it died away. There was a brief pause and a stronger voice came in:

"To Captain Christopher Burke, United States Air Force; Major Oliver Chartain, United States Air Force Department of Space Medicine, and Lieutenant Junior Grade George Trig, United States Navy—congratulations!"

The men in the cabin regarded each other with startled glances.

"Congratulations. . . ." the voice repeated.

"What the hell," Trig murmured. Burke waved his hand for silence.

"Our comrades in the West are following capably the achievements we in the East have already made." Burke noticed the voice held a faint but unmistakable foreign accent.

"We profoundly regret that your success has been marred by the unfortunate destruction of the *Moth* during recent trouble at Yoland Air Development Center. I repeat—the *Moth* has been destroyed . . . but the death of the *Moth* does not detract from your achievement. We, in the East, offer our congratulations."

"Don't believe it," Trig said softly. Burke motioned him to silence. The message was repeated several times before the voice receded into the noise field. When it finally died away, Chartain queried, "Did you get it taped?"

Burke nodded grimly. "Rikeman will be interested in that."

"I don't believe it," Trig asserted dubiously.

"Not a bit," Chartain snapped positively. "The old psychological warfare. The old brain wash."

"Hogwash," Burke agreed. He smiled at the men. "Don't worry about the *Moth*. When the time comes, it'll be there—ready and waiting."

"But I'd sure worry about their spy system," Chartain mused. "Not a handful of people on the island knew our names. but they did. Name, rank and service."

"Rikeman will be interested in that, too," Burke drily affirmed. "Not that he'll be surprised."

"No, I suppose not." Trig and Chartain returned to checking their equipment and Burke went back to the port, moodily watching the black world below, wondering what lay ahead.

They were coming around again, cutting north of Okhotsk, slicing down over the Bering Sea, obliquely into the Pacific. Bering Strait—somewhere below the sea of clouds lay the narrow gate through which the enemy submarines had slipped to launch their attack on the island. Once or twice he caught fragmentary glimpses of land—or was it sea?—but nothing that he could recognize. He had imagined that a satellite would provide an excellent bird's eye view of the earth; instead, it was largely masked by night or cloud, and the open spaces more often than not were ocean. He looked wryly at the scopes provided for optical tracking, thinking they were so much dead weight. The minutes fled.

Turn three . . .

Four-twelve p.m. Greenwich time—33 north, 168 west—and dawn below. They had been in orbit exactly three hours, twelve minutes . . . around the world twice. They had crossed every continent, every ocean-sea, had twice passed over the enemy's missile heartland. Eleven full turns to go, fifteen at the most; almost twenty-one hours and three hydrogen bombs. Toss in *Spy Eye* and the hellish *Moth* re-entry for a bonus and that about wrapped it up, Burke grimly thought.

In almost no time at all, it seemed, the Hawaii tracker was crackling messages up through the ether while the *Argus* dispatched its own news—Chartain's medical data and the enemy message. Burke watched the signal light with a tense jittery feeling. He studied the control console intently, placing locations of keys against the map of instructions he carried in his brain.

An orange alert light flashed. He tensed, checked his fingers for positioning and waited, nervously licking his lips. The small muscles of his fingers felt frozen into immobility and his arms ached. A red light came to life with a series of flashes; he automatically pushed the power keys, and immediately sensed the *Argus* respond. The action of the rockets gave a momentary feeling of weight before the burst of acceleration was lost. He checked the radio altimeter and made sure the course change had registered as a reset in the ship's memory banks. Everything looked okay. He waited, feeling the burden of time while the chronometer slowly recorded its passage. The cabin was deathly silent except for the faint whirring of the air fan.

"There she is." Chartain breathed the words over his shoulder in an awed voice. Burke swung his eyes to the radarscope. *Spy Eye* was a phantom blip on the tube. He glanced at the chronometer, returned his eyes to the instrument panel and back to the chronometer again, feeling the strain of the wait. There were too many things to monitor. Like the Argus of mythology, he needed a hundred eyes . . . and the arms of an octopus. The squawk box crackled to life and the Hawaii tracker told them that a preliminary ground fix looked good; they were right on. He listened without moving his line of vision from the panel. Beads of sweat stung his eyes and he shook his head to clear them. The orange light blinked, then the red one, and he punched the power keys and immediately touched the proper deflection steering rocket buttons. Tiny hydrogen peroxide thrusters brought the *Argus* into its new orbit, bringing a sense of weight that came and passed with completion of the operation. He moved to the optical sight and got *Spy Eye* in the cross-hairs, holding it there until certain their course was parallel to that of the ominous hulk in space, then pushed himself back from the control panel, dimmed the cabin lights and looked out the viewport. "Got it," he exulted.

Trig and Chartain crowded anxiously behind him, craning their heads to obtain a view over his shoulder. *Spy Eye* was a large sphere with short snubbed antennas, and a larger one that ended in a curious, basket-like structure, making the whole thing appear somewhat like a lopsided barbell. Burke briefly wondered if the enemy satellite was recording their presence, and if so—what was it telling its masters? A slight shiver shook him. Out there, just beyond the port, was a super intelligence agent or, more correctly, he thought, a complete intelligence kingdom.

Trig mused, "Damned if it ain't an ugly rascal."

"A dangerous one," Burke offered, "but we're here to yank its teeth." He turned abruptly toward them. "Let's get going."

He and the doctor made a quick last minute check of their personal equipment while Trig got three portable oxygen tanks from a rear bulkhead supply cabinet. They were the latest rebreathing type in which respired air was purified through the use of chemicals. Chartain examined them carefully, then cautioned the others not to over-breathe and to watch their oxygen gages. They hurriedly connected the tanks into the suit systems and fitted them on their backs, then Burke opened another cabinet and brought out three .32 caliber automatics and a supply of clips. Trig eyed the weapons curiously. They had been specially made with extra long barrels and grips designed for handling with the bulky pressurized space gloves. Burke smiled at Trig's frankly puzzled look.

"For space navigation," he explained. "If you want to move in any given direction, just fire a shot in the opposite direction. Presto!—you'll be on the way. The old man's idea. Pretty good, eh?"

"Then why the sleds? Why not just use the gun?" Trig inquired.

"More thrust . . . more speed. Better for long range." Burke handed a weapon and supply of clips to each of them and thrust his own into his leg pocket. Chartain pulled the space sleds from the wall and lined them up by the hatch. Burke scanned them quizzically. They were long, narrow and built somewhat along the lines of a surfboard with a bobsled nose.

"Watch the firing buttons," he cautioned. "They're loaded." He smiled grimly at Chartain. "All set?"

"One word from the medical brain trust before we start," the space doctor declared. Burke and Trig looked inquiringly at him. "In the very short time we've been in orbit the *Argus* has became our earth . . . sort of a sanctuary. We've managed to adapt to it so that, for all practical purposes, it represents safety—what psychologists call the womb sanctuary. But now we're going to sample a new environment, a completely alien one, and our miniature earth will be our pressure suits. The drastic reduction in environmental size may bring claustrophic reactions, giddiness, vertigo . . . but I think we'll get used to it pretty quick. At least I hope we will," he added wryly. His eyes weighed them briefly.

"There may also be some psychological factors we'll have to watch . . . such as a tendency to forget, or a I-don't-give-a-damn feeling. So keep sharp, watch your oxygen, and don't over-breathe."

Chartain looked gravely at them and ordered: "Five psi pressure." Burke shut and locked his faceplate and opened the oxygen valve. His suit came to life, swelling, compressing his body; he squirmed his muscles, trying to make himself more comfortable. No luck. He glanced at his companions—they were ready, waiting. He switched on the suit interphones and tested.

"Gotcha clear." It was Trig's voice, flat and metallic.

"Okay," Chartain rapped out.

Burke gave a last look around the cabin, hoisted his space sled up and moved toward the hatch combing, then hesitated.

"The air will explode out when I open up, so get set." He braced his body against the side bulkhead, grasped the edge of the hatch combing for support and opened the lock. The door exploded open. For an instant he felt himself being pulled outward before the force of escaping air was expended.

He stood for a moment, his body framed in the hatch opening, looking into space. Before him stretched all infinity, an endless universe in which galaxies were relative atoms and the earth—nothing. A wave of nausea swept him and he clung weakly to the hatch combing until it had passed. He hesitated, almost imperceptibly, then took a tentative step into space still clutching his sled. His body floated outward, slowly rotating. The stars spun across his faceplate and for one giddy, nauseous moment he thought he would vomit. He clamped his eyes shut and waited until the first worst seconds had passed. When he opened them again, Trig and Chartain were in space rotating slowly off to one side. The doctor, too, must have experienced the vertigo for he suddenly advised:

"Close your eyes." His voice sounded faint, weak, and Burke quickly asked, "Everything okay?"

"Dizzy," Chartain replied, "but it's passing."

While the two men were getting oriented, Burke tried to fit his body on the space sled and found it difficult. It was simple enough to get the sled into position but getting it pointed toward *Spy Eye* was quite another matter. He halfway succeeded and looked around, trying to spot his companions in the endless soft purple-black night. Chartain was visible to one side, still struggling with his sled, but the UDT man was lost to sight.

"Trig!" He spoke sharply into the mike.

"On deck." The answer came promptly. Burke shifted his head, searching space and finally saw Trig's sled swimming toward them in a shallow dive.

"Watch out," he warned. The incoming sled veered, seeming to change course with imperceptible jerks until, finally, it was headed toward *Spy Eye.*

"Clown," Chartain muttered in the phones. Burke felt a surge of anger toward Trig for wasting fuel, but at the same time had to admire his quick conquest of the tricky vehicle. He supposed it was due to his frogman training, and made a mental note to have Chartain pass that information on to Rikeman.

"All set?" Burke's voice boomed hollowly in his ears.

"All set," Chartain responded, sounding as if he didn't quite believe his own words. Burke pressed a stud on the front of the sled and felt it tug against his body. After a moment he saw that *Spy Eye* loomed larger. He looked closer and discovered he would pass somewhat to the left of the horned sphere. He started to rock his sled to correct his course, then remembered the gun provided for that purpose. He pulled the weapon from his pocket, calculated the error in heading and tried to point it in the opposite direction, finding the weightless gun difficult to handle. Finally he managed to get it aimed in the right direction and pulled the trigger. The sled responded immediately, its nose swinging slowly toward the right. He pressed the stud controlling the braking rockets without any conscious sensation of deceleration; but all at once *Spy Eye* seemed enormous. Trig's figure, clinging to one of its horns, was dwarfed in comparison. He whistled to himself. The satellite was no midget.

"How's it look?"

"Like a Navy buoy with horns," Trig responded. His voice grated in the earphones. "Putting this baby out of commission will be a cinch."

While Burke maneuvered closer, Trig dexterously removed a packet of tools from a leg pocket and hauled himself to the point where a small plate was recessed into the satellite's hull. Burke managed to anchor himself against *Spy Eye's* metal skin. Between rifts in the clouds he caught the hard glint of light reflected from the sea, and felt momentarily dizzy. He tried to refocus his eyes on Trig, but the UDT man's form was a blur. He closed his eyes, waited a moment longer, then opened them again—Trig was sharper this time. He clung to a horn and watched Trig's progress, admiring his quick adaptation to space. The Navy man seemed to be working as easily and dexterously as he had back in Baby's house. Obviously he was making the adjustment faster and far more easily than either Chartain or himself. The sea, Burke thought, he's used to working in the green depths in a three-dimensional environment. He took to space as just another sea, vaster but not too far different from his point of view.

"Need any help?"

Burke looked around and saw the doctor drifting almost at his shoulder.

"Almost got it," Trig announced. A moment later he had the plate free and tossed it carelessly into space.

"Easy," Burke warned sharply, "that's enough to kick this critter out of orbit." Trig flashed his handbeam into the interior, maneuvering his body so that his eyes could follow the ray of yellow light. Burke waited restlessly and finally asked, "Any difficulty?"

"Nope, just want to make sure this baby isn't loaded." Booby-trap. Burke had forgotten that possibility. He licked his lips nervously. Trig studied the interior for a short while longer, then calmly shifted his body so he could insert an arm into the opening.

"She okay?" Chartain asked anxiously.

"A cinch. All I have to do is disconnect this monster from its power source, like this . . ." Trig squirmed until his arm was buried to the shoulder while the others watched nervously. "Got it by the guts," he grunted. Within a few more seconds he withdrew his arm and said:

"That does it."

"Nothing more?" Burke asked surprised. Somehow he had expected a major operation.

"That's all," Trig responded laconically. He sounded pleased with himself. Burke studied *Spy Eye* for a moment longer before turning back toward the *Argus*. It seemed like a speck in space, far away across the black gulfs, a small shadow moving across the face of the stars. He felt quick alarm. They hadn't come that far!

"That's what I'm thinking," Chartain softly exclaimed, as if reading his thoughts. "We must have knocked this critter out of orbit . . . or been on a slightly diverging path. Let's get moving."

"Let's," Burke echoed. He struggled to position his body on the sled and get it pointed toward the distant shadow of the *Argus,* floundering for a moment before he succeeded. Apparently Trig didn't share their worries for his voice suddenly sang through the phones.

"Look," he exclaimed happily, "Newton's Third Law in action."

Burke started to cry a warning but Trig, crouched against the satellite with the long axis of his body pointed toward the *Argus,* had already propelled himself into space. He shot toward the ship clutching his space sled, his body tumbling head-over-heels in a queer slow-motion fashion. Burke watched, alarmed, until he saw that his aim had been true. Chartain said drily:

"I'll try it a safer way."

"Amen." Burke nodded and checked the position of his sled, then pressed the firing stud and started slowly in the course taken by the carefree Trig. He glanced back at Chartain trailing in his wake. When he looked at the *Argus* again, it was a monster drifting serenely in space. All at once it looked, to Burke, like home.

CHAPTER 9

SPACE IS AN environment of emptiness, a box without boundaries—without bottom, sides or top—dimensionless. It has no medium to scatter light and the sky is perpetually black; not the black of coal but a soft purple-black, a three-dimensional color, against which the sun is a rayless brilliant ball. It is a field of gaily colored lanterns—baleful reds like the giant eye of Betelgeuse, hot blue-whites like those in the girdle of Orion, the winking azure of the Pleiades deep sunk in the heart of Taurus, and the weak yellows of minor suns, like Sol. Space has no night, no day, no atmosphere to propagate sound. It is a realm of eternal silence, temperatureless, a hostile barrier serving to lock all life forms to the planets of their origins.

But space is rich in energy—radiation and fast-moving particles. There are vast magnetic fields and electric currents like those through which earth moves, protected by its thick blanket of atmosphere—a world less than an atom in the gigantic structure of the universe. Cosmic rays, mysterious atomic nuclei from stellar depths, fall upon the tenuous surface of its air ocean in continual assault, producing a host of lethal secondary particles—protons, neutrons, mesons and photons. Ultra-violet and X-rays from the sun form seething masses of ions high in the upper atmosphere. It is a hell of radiation. Other messengers come. Occasional huge chunks of metallic rock and swarms of micro-meteorites—the fast-moving dust of space—sweep from the depths to bombard the air ocean; hit and blaze to nothingness in the passage through earth's shield. But far below, near the very bottom of the air ocean, there is a calmness which allows life.

One moment earth was a tremendous splotch of darkness without form or substance, a somber giant adrift in space like some colossal amoeba blotting out the starfields; the next a plane of daylight hurtled to meet them. Burke watched the scene with mixed feelings, a growing sense of insignificance as the panorama below unfolded. The measure of man's audacity seemed writ in the racing line of light.

The dawn came up like thunder . . .

The Sea of Kamchatka had wheeled past, smothered in the Arctic's magical dawn-light; ahead was the blue Pacific. Blue except for a sea of white clouds which occasionally opened, canyon-like, exposing the deeper green beneath. Again he thought it strange that so much of the earth lay cloud-covered, concealed under the thick multi-gray blankets. He glanced at the chronometer, waiting impatiently.

Turn four . . .

Five forty-eight p. m. Greenwich Clock, 33 north, 168 east and twelve full turns to go. Twelve turns, three hydrogen bombs and the hellish ride down in the *Moth,* if everything went okay, he thought. But at least they had snared *Spy Eye.* He bit his lip vexedly, impatient for what was to come. Chartain was right: idleness was the spaceman's chief antagonist—a subtle foe who battled with psychological weapons. The muscles as well as the mind had to keep busy.

He was thinking about it when the Mid-Pac tracked came in, gave a position check and receded in the noise spectrum. Still he waited, watching the chronometer and viewport by turn. Tiny Tokelau Island rolled past, clearly etched against the sea through the window of tropic air. Samoa fled astern. A short time later, Forward Fox One, a bleak station located in the midst of the icefields confirmed their position.

Once Burke looked back. Trig was lying, eyes closed, lost in thought. The doctor was bent over his environmental instruments, a rapt expression on his face. Burke was momentarily annoyed. Trig could loaf, Chartain could pass the time lost in contemplation of what the gages told him; but he had to wait. Wait and stew. The price of command, he told himself. He should have been a bellhop.

They came up over the South Atlantic in a world split between night and day; or, more correctly, merging from one into the other with appalling rapidity. He watched the cloud-spattered ocean pass beneath, dusk come—a surge of darkness just moments long—calculated when they were over French Equatorial Africa, Libya. The Mediterranean fled by in the darkness, Turkey and the Black Sea sped underfoot. He took comfort in the knowledge that friendly saucers in Samsun and Elzburg monitored their flight right under the enemy's nose. He looked at the chronometer again, thinking they should be somewhere in the vicinity of Kapustin Yar, the dread missile base from which the hydrogen bombs had been hurled. He breathed easier when it slipped by. Now they would be crossing almost the breadth of Siberia, silent and ominous beneath them. He was staring toward it when the radio crackled to life. The men in the cabin looked toward it with one accord. Static, harsh and sparking, gave way to a curiously faint voice:

"The Moth is dead . . . The Moth is dead . . . The Moth is dead . . ."

Burke made a move to snap the communicator off but Chartain stopped him:

"No, hear it out," he whispered. Burke hesitated.

"Hear it out," Chartain reiterated. "Hear it out and tell yourself: 'This is hokum.' It's a voice we've got to learn to live with, but we can learn to treat the message for what it is—hokum."

Burke withdrew his hand and nodded silent agreement. Yeah, he would let the voice get him.

"The Moth is dead . . ."

They listened silently until the message became tangled in static and finally lost. Long after it had faded away Burke heard the refrain tumbling through the recesses of his mind the way, he thought, a singing commercial remains to haunt you.

They came down west of Okhotsk, clipped the tip of Sakhalin and raced toward the dawn line. The earth again was a split apple: part night, part day. Burke couldn't turn his eyes from the port. It gave him the feeling of standing in a darkened room looking down on a miniature globe of the earth by flashlight—a feeling of omnipotence. A man could be a god in space, he thought. From time to time he impatiently glanced at the chronometer. There was nothing to be done until the Wake tracker came in with the navigational directions necessary to intercept Big Head One, the code name given the first hydrogen bomb. After that would come Big Heads Two and Three—if they lived that long, he thought wryly.

Now that time for action was nearing he felt tense, on edge, impatient—anxious to get started. The immediate exhilaration of scuttling *Spy Eye* had long since dimmed, replaced by a now-familiar depression. The need to be doing something was becoming overwhelming, imperative, almost a pressure. He glanced toward his companions. Trig was day-dreaming again, a distant expression on his face. Chartain was talking into the recorder in a low, precise voice:

"Carbon dioxide content, zero point four at 7:20 p.m. Greenwich Clock. Temperature 72 degrees Fahrenheit, relative humidity 42 per cent . . ."

Burke listened with one part of his mind while the remainder considered the task ahead. Turn five was coming up; at least nine turns and three bombs to go. The passage of time disturbed him despite the fact they were right on schedule, nor could he put the navigation problems facing him out of mind. The *Argus* had none of the conventional instruments used in high-Mach aircraft, nor were there visual cues to steer by. It was like flying on instrument with the instruments missing, he thought. Space was a void without reference other than toward or away from any specific heavenly body which, in itself, was a complex of movement. There was only an occasional voice crackling up through the lonely ionosphere, giving coordinates which had little or no understandable reference. Only the giant computers knew and understood; the voice was but a parrot. They alone could compute the *Argus'* path through the skies—predict and guide and place it at a precise spot at an exact instant of time. Providing human error didn't foul things up. That's the trouble, he thought, wherever there were humans there was error. He was better off than most, with his training, yet he felt he was entering into the present venture with little of his skill available. Why? He held out his gloved hand and studied it. Yes, he could almost see the unsteadiness. Yet, within minutes, their lives would depend upon his split-second timing, the accuracy of his fingers. Could he do it? He took a deep breath. He could do it. The mental decision somehow made him feel better.

After a bit the squawk box began to crackle again. Chartain snapped off his recorder and prepared to transmit his message in what he called the "economy package," everything in one short burst. Burke positioned the microphone, conscious that his hand still trembled a bit. He made an effort to stem it and failed. Relax, take it easy, he thought, the roughest part is ahead. The trembling began to subside and he felt somewhat easier.

Turn five . . .

If it weren't for the clouds he could almost see the small islands of the Pacific scattered just beyond the dawn line, he thought. Seconds later the tiny base below broke through, filling the cabin with static and, finally, a human voice. Burke swung on the recorder while he acknowledged. The speaker plunged briskly into the task of giving coordinates, navigational instructions and directions for activating the firing keys as if it were the most routine thing in the world. The information was scarcely completed before the noise field rose and Wake tracker receded and was lost. Burke felt faintly perturbed, apprehensive, until he realized it was because he hadn't heard from Rikeman. That was it. Rikeman represented his bond with earth, his key to safety; he and the *Moth* seemed practically synonymous. Silly, he scolded himself, the colonel was just one man in an operation that spanned nations. Nevertheless, it would have been good to have heard from him. He studied the chronometer —within minutes he would punch the firing keys. Minutes . . . an eternity. He played the taped instructions over to make sure he had them, then looked at the chronometer and waited. Not yet! He tried to relax but couldn't. No use, the tension was there, deep inside him, plucking at his nerves until they seemed to vibrate like taut steel wires. He looked enviously at Trig, wishing he could day-dream the time way. The UDT man caught his glance and winked.

"I'm thinking the same thing. Be nice to get back on the flatlands again, huh?"

"No sweat," Burke replied with forced cheerfulness. "As a matter of fact, this baby's a lot safer than some of the kites I've jockeyed."

"Until we start down."

"Don't worry about that," Burke snapped, conscious that his voice had risen. He turned back to the chronometer thinking things were tough enough without Trig reminding him of what lay ahead. Besides, that was his worry.

At a precise instant of time the orange caution light blinked, followed shortly by the red light, and he punched the appropriate rocket firing keys, feeling the faint sensation of weight as he did. He waited, thinking: the *Argus* would be deviating from course, cutting across trackless space to rendezvous with another particle in the sky. It was like the chance meeting of two atoms in infinity—except that these atoms moved by prescribed mathematics.

Big Head One raced over the segment of a circle while the *Argus* traversed its chord; somewhere in the vastness they would meet. Finding *Spy Eye* had been a cinch, he concluded, and after all this was the same thing, the same operation. He waited, feeling easier. The scope was clear, the sweep hand of the chronometer crept over its destined course, the cabin was still, all but the low hum of the air fan. Once he looked around. Trig looked as though he were asleep; Chartain was hunched, immobile, over his instruments and at that moment the interior of the cabin had the stillness of a tableau. Incredible that they should be racing through black space so fast, he thought. He swept his eyes from the chronometer to the panel and waited, fretfully, anxious for action.

After a while the orange caution light flashed again followed by a winking red eye, and he automatically punched the deceleration keys; a second red light blinked and he fired the hydrogen peroxide steering rockets to bring the ship back into proper orbit. He looked at the radarscope. Blip . . . they had it. He dimmed the cabin lights and moved to the optical scope, peering intently into the dark gulfs ahead. Somewhere out there a bomb moved serenely over the earth, armed with the venom of man's hatred.

Big Head One swam toward him out of the darkness, enormous against the star field. At first it had been a blip on the radarscope, then an inky blot against the less dark night; now it was vast, ominous, a giant in the sky, half black and half white except that space mottled the white to a dirty gray. He became conscious of Trig and Chartain at his shoulder and moved slightly to give them a view of the approaching hulk. They watched it silently. Big Head One was a hydrogen bomb, delicately balanced in orbit, yet the potential master of continents. It would move unerringly over the earth until—and if—its master made a telemetered command. If that happened, small rockets would fire, pushing gently downward, and Big Head One would start home. It would drop toward the curve of the earth while maintaining its high forward velocity of around seventeen thousand miles per hour over an earth rotating at over one thousand miles per hour. The sum of its motions would take it into the near vacuum of the ionosphere in a long closing spiral . . . down through the stratosphere and into the troposphere to wipe out a large part of a continent. Men would wait its coming, crouched behind batteries of push-buttons, prepared to hurl counter-missiles skyward. But nestled in Big Head's nose were batteries of anti-missiles with atomic warheads monitored by its own self-contained radar. It would sweep the skies before it. Cities would vanish in sun-hot heat, states would perish under a radio-active blanket, the heart of a nation would shrivel and die.

There was but one flaw—fortunately for them. Big Head One couldn't be plunged earthward at will. It could only be activated at a precise point in orbit in order to blast a specific target. Any abrupt decision for war would necessarily have to be followed by a wait extending anywhere from zero time to ninety-six minutes. After a short while the space doctor observed:

"A tough baby."

"Yeah." Burke knew exactly what he meant. Big Head One was far more than a mere bomb. It was a complex mass of integrated equipment containing tens of thousands of component parts, each of which had to function with absolute precision. It was a maze of delicate wires, fragile tubes, minute gyroscopically-protected accelerometers which nevertheless, had to operate faultlessly amid tremendous fields of hostile forces. Big Head One would have to withstand the awesome decelerations imposed by air loading when it struck the denser layers of the atmosphere. It would glow cherry-red, become a veritable furnace without losing precision of function; behind its blazing skin its delicate brain would continue operating with deadly coolness, pointing its way toward the waiting cities. It was a bomb designed to go through hell in order to deliver hell. Chartain was right, it was a tough baby. Tough and wonderful and fearful, all at the same time. He took a split second to admire the science that could conceive and execute such a weapon, then drily wondered if it really represented brilliance. It was, after all, a weapon that could well destroy its makers. It was, he reflected, the most fearful monster yet from the workbench of Frankenstein.

He had moved back to the optical scope and was watching the bomb closely. Big Head rotated slowly, imperceptibly, presenting in turn its white and black hemispheres to the sun; the black to absorb heat, the white to reflect it, and thus maintain thermal equilibrium within its sensitive inner core. He idly wondered what would happen if they merely stopped its rotation instead of disarming it. How long would it take Big Head to shrivel and die? He saw that the bomb moved slightly off the cross-hairs, and made small corrections with the steering rockets until finally the ominous mass ahead remained constant in the scope.

Chartain and Trig began preparing the space sleds and making last-minute checks of their gear. They worked quietly, wordlessly, with an intentness that told Burke of their anxiety. He wasn't the only one breeding an ulcer, he decided. Despite the doctor's calm, and Trig's sometimes forced cheerfulness, he sensed the same unease in them that he felt—a strange mixture of fear, anxiety and nameless dread coupled with moments of exhilaration, like when they had neutered *Spy Eye*. That and the drive for action.

Since the experience with *Spy Eye* it had been arranged that Burke stay behind while Trig and Chartain tackled the bomb. If they overshot their target, or drifted, he could move the *Argus* in, but only as an emergency due to their scant supply of fuel. Trig finished with his equipment and announced loudly:

"The master plumber goes to work. It'll be good to get back into harness again." He snapped his faceplate shut and released oxygen into his suit. Burke couldn't decide whether Trig spoke from relief or to quell his inner feelings. One thing was certain: the job wasn't easy. This time it was no mere *Spy Eye* but a hydrogen bomb—a big live one. Of course, if anything happened, they'd all be in the same boat. Only Trig had the actual job of disarming it. Burke silently conceded that was harder than merely watching. Any nervousness that Trig displayed was entirely understandable.

When Chartain was ready, they tested their heating elements and intercoms and then Burke opened the hatch, bracing his body against the blast of escaping air. His eyes rested on earth for a moment. New Zealand was wheeling astern, the smoky shapes of its North and South Islands etched sharply against the cool emerald green of the Tasman Sea and South Pacific. Ahead, to the right, toward the Antarctic, the sea met and merged with a gray sheen of clouds. He felt less vertiginous this time and wondered if he were adapting to space. He sensed the impatience of the men behind him and moved back; a moment later Trig and Chartain stepped clear of the cabin. The UDT man fitted himself to his sled with one graceful movement, but the doctor had his customary trouble. Burke watched until Chartain got positioned before closing the hatch and repressurizing the cabin in order to use the radio. By the time he released the pressure from his suit and returned to the viewport, the blobs that were his companions had receded into the ocean of night, the exhaust rockets of their sleds blinking like ghostly lanterns in the sky—the lanterns of a galleon on a lonely sea, he thought again. He positioned his mike and waited. In the distance a beam cut through the night, bathing Big Head One with an eerie light. Trig's voice cracked in his earphones:

"Looks mean, doesn't it?"

"Yeah." Chartain drawled out the single word. The beam cut off again. Burke strained to see, trying to pick the men out of the sea of space . . . only the star-erasing bomb was visible. He waited, feeling the stillness. It was a thunder in his ears. A sense of loneliness and desolation gripped him. The departure of his shipmates had left him with an odd feeling of total isolation—a feeling verging on panic. He fought it down, yet conscious that it remained, lurking just beyond the threshold of conscious awareness, threatening to erupt anew. He flicked a glance at the chronometer. They were wheeling parallel to the icefields, now lost below in thick banks of clouds. He concentrated on the viewport and microphone. Two beams flashed on again, joining to form a V with Big Head One at its apex.

"Okay, I'm anchored on," Trig rasped. "I've got this baby by the horns."

"Need help?" Chartain's voice sounded calm. Too calm, Burke thought. The doc must be a volcano inside.

"Not at the moment." Burke peered through the port but the distance was too great for his eyes. He fretted, trying to visualize the scene. Trig would be dexterously removing the plate recessed into Big Head's belly, duplicating the process he had learned in handling the dummy of the bomb. Now he would be playing his torch into the small aperture, pushing his face against the small hole to see the bomb's innards, trying to discern the key wiring he would have to sever to render the bomb impotent. He turned his eyes downward for a minute, then looked worriedly at the chronometer. The Cape of Good Hope already was racing past, and they were cutting into the Atlantic toward the dusk line. He fretted, wishing Trig would hurry. There seemed an intolerable wait before the UDT man spoke again. When he did, his voice came with a worried snap:

"It looks different."

"How?" Chartain quickly asked.

"Don't know, only it's not like the schematics."

Burke cut in, "Don't touch it."

"Not this little old UDT man," Trig feebly joked. He added, "Let me study it a minute."

Burke waited impatiently. Up to now the prospect of a booby-trapped bomb had been just that—a prospect. Suddenly it was a nightmarish reality. He checked their position. If Big Head blew, there'd be no fall-out but a blast of radiation would hit the earth. Not full-force, of course, because radiation obeyed the inverse square law. But it could be bad . . . bad. Well, they were in a fair spot for it if it should blow. But if it did, Rikeman would lose his gamble. Rikeman and the nation. The other two satellite bombs would remain, circling the earth fifteen times daily—deadly military and political threats to the Western world. The enemy would be left in the driver's seat. Trig's voice cracked abruptly in his ears. "She's different, all right, but I don't know just how. I can't get a good look at her guts."

"We'll have to take a chance," Chartain cut in flatly.

Burke thought quickly. They couldn't delay—both fuel and time had been figured too closely. Besides, within a short time, they would be over densely populated regions where they couldn't risk the radiation storm that would strike earth.

"Well, here goes for nothing," Trig announced. "I'll take a chance."

"Hold it," Burke snapped.

"There's no use waiting," Trig argued weakly.

"Hold it," Burke ordered, "give me a moment to think." He gripped the microphone tightly, his eyes staring into the blackness. The bomb. They had to disarm it . . . that was a must. He calculated rapidly: he could withdraw Chartain, pull the *Argus* to a safe distance, and let Trig proceed with the disarming. Despite the cost in fuel and time, it seemed the only solution. He quickly outlined his plan to the others.

"No good," Chartain asserted, when he had finished. "We couldn't get far enough away to get clear of the radiation belt."

"But we wouldn't die immediately . . . if we moved to the extreme limit?"

Chartain considered. "No," he said at last, "I think not. Not if we retreat far enough. We might survive a few days —according to the degree of burn."

"But we'd live long enough to complete the mission, even if we lost Trig," Burke insisted. He bit the words off too late. There was a long moment of silence.

"Sounds plausible," Chartain conceded at last. "What do you think, Trig?"

"Okay by me." The UDT man's voice was brittle.

"It's a rough decision," Chartain said sympathetically.

"A necessary one, I guess," Trig grunted. "Don't see any other way . . . you know enough about the bombs to disarm the rest of them."

"There's no other way," Burke interjected quietly, "but we'll have to hurry." Now that he had made the crucial decision he was anxious to get on with it. "Come on in, Doc."

"Coming . . ."

Burke scanned space beyond the viewport; Trig's torch was a lonely beacon almost lost in the distance. He wondered what the UDT man must be thinking. Alone—abandoned in space—a castaway on a hydrogen bomb. He would be watching Chartain retreat toward the ship, feeling—what?

Chartain's sled came out of the blackness spurting blue flame from its deceleration tubes. Burke snapped his faceplate shut, pressurized his suit and opened the hatch just as the doctor's sled bumped gently against the ship's side. Burke gave him a helping hand, then closed the hatch, pressurized the cabin, and got back on the radio without giving Chartain a chance to comment. Somehow he felt guilty, as if he were deserting the stalwart UDT man. Yet there had been no alternative. It's Trig's job, he told himself defensively. Subconsciously he shifted his shoulders as if to free himself of the weight of command. He glanced down. The earth was black, lost in its fantastically short night. According to the chronometer they should be approaching the West Coast of Africa. They'd have to hurry. Europe was coming up.

"Stand by," he told Trig, "we'll give you the word when to go ahead."

"Okay," Trig drawled, "I won't leave."

Burke studied the rocket keys a moment before moving his fingers gently over them, fretting at the expenditure of precious fuel and time, galled because there was no alternative. Big Head One swung sideways across the port and disappeared. He watched the sweep hand of the chronometer, the panel and the scope, all at the same time, trying to calculate their rate of retreat from the bomb. Chartain watched wordlessly, his face grave with concern. Burke flexed his fingers above the deceleration keys and waited.

"All set?" Trig's voice sounded anxious and plaintive, both at the same time.

"A moment," Burke answered evenly. He was aware of Chartain standing at his shoulder.

"Will we be able to get back into proper orbit?" There was doubt behind his question.

"No," Burke admitted. "This shoots the schedule. But Trig's our best reference point. When we return, we'll try and establish an optical fix and wait until we pass over one of the monitoring stations, then correct."

"And if we lose our schedule?" Chartain pursued.

"Then we lose it," Burke snapped. "Can you think of a better way?"

"No—I suppose not." Chartain fell silent. Burke touched the deceleration rockets gently, waited a second, then rotated the *Argus* through use of the steering rockets until its nose pointed in the direction from which they had come. He used the optical tracker to get a fix on Big Head. Satisfied with their position, he got back on the mike.

"Okay, Trig—and good luck."

"Good luck," Chartain added hollowly. A grunt came back through the phones, followed by a brief silence.

"Put on the recorder," Trig ordered tersely. Burke complied, wondering what he had in mind. Trig came in with a detailed description of the bomb's interior and what he was about to do. He spoke in quick, nervous tones. Finished, he paused for a split second and added:

"If this critter blows, feed the info to the monitors next time over. That'll give 'em a better idea of what not to do next trip."

"Check," Burke said. He hesitated. "We're ready."

"Ready on one," Trig replied.

Burke felt the tension building up inside him until it threatened to erupt, and wondered how Trig was standing the pressure. It must be intolerable. He glanced at Chartain—his face was stony, all but his eyes. They told the strain he was under. Burke forced a wink and returned his attention to the mike.

"I'm going to pull it," Trig told them.

"Shoot . . ."

The wait was agonizing. The sudden silence gripping the cabin was so deep that the faint whirring of the air fan was a shriek in Burke's ears, his heart a hollow thump in his chest. He looked fixedly at Chartain. The doctor's face was a taut graven mask, waxy in the dim light, gleaming through his visor where light reflected off the beads of sweat. He glanced at the chronometer—the seconds crawled like hours. After an eternity Trig spoke again:

"Done." His pent-up sign of relief was welcome in Burke's ears. "Baby's emasculated."

"Good." Burke felt the tension melt away. Big Head One hadn't been booby-trapped after all. Or if it had, Trig had found the right combination. Big Head One would continue in orbit indefinitely, or until the thinly-spread atoms in space exerted sufficient friction to slow it down, sending it through the atmosphere in its death spiral. But it wouldn't blow. That was the main thing. Big Head was a gigantic dud, a farce, a comic-opera bomb. He headed the *Argus* back to where Trig waited, feeling elated. Two to go, then back home . . . back to Laura. Back to that little dream house on the hill where there was never, never the harsh jet whine—no satellites. All at once the prospects seemed extremely rosy.

CHAPTER 10

THE GENERAL'S VOICE was a hard snap over the wire. Hard and brittle and clipped.

"They knew what we were up to the minute we hit space," he told Rikeman. "That makes it bad. If they know we're actually disarming their bombs, they might drop them in desperation."

"They know." Rikeman shifted the receiver slightly away from his ear. "After all, you can't circle the earth in a partial polar orbit without passing over enemy tracking stations. Besides, they knew our intent long before we launched. The constant attacks on the island testify to that. And the propaganda message they've been shooting at the *Argus,*" he added.

The general brushed the explanation aside. "Certainly, but that's not the point. I'm just telling you how perilous our present military situation is. The enemy's whole strength is invested in hydrogen satellites. They can't allow them to be negated. If they're certain of that possibility, they'll probably elect to use them."

"They can't home them down at just any time," Rikeman pointed out. "They have to be at precise points in orbit . . ."

"A matter of an hour or so at most," the general interrupted.

"Has their ambassador handed us a note yet?" Rikeman cut in.

"They'll probably skip that step," the general grimly prophesied. "It's too time consuming . . . besides, they know we would reject it. No—I'm afraid of another Pearl Harbor from the skies."

"I doubt it," Rikeman reasoned. "They know that SMEWS would pick the satellites up during approach glide and that would give us time for our ICBM's and SAC bombers. We could smear them from one end of the continent to the other, even if we get wiped out ourselves . . ."

"That's it, we can't stop their bombs," the general interjected testily, "not with the atomic anti-missile warheads those babies carry."

His voice rose. "Desperate men will try anything. And make no mistake, those men are desperate. We're cutting down the mainstay of their military strength. Believe me, Colonel, Washington is perturbed. The top man is breathing down my neck."

"I doubt if they're desperate enough to invite a shower of hydrogen bombs," Rikeman said drily.

"I'm not so sure of that. But the main thing is, are you positive you can carry it off?"

"We're doing it. According to the schedule Big Head One is just so much junk up there now."

"How about the other two?"

"We'll get them," Rikeman promised.

"Do that." The general's receiver banged in his ear.

A continent spun by, great chunks of land interlaced with cloud; an ocean, a chain of lakes rushed to meet them and disappeared in their wake. Day, night and day again, seemingly within minutes. Clouds, huge banks of clouds and occasional sun-struck waters whirled by beneath, but in the main the world lay crouched, hidden behind the gray curtains in its skies. Burke looked at the optical scope, instrument panel and chrono in turn; looked for the hundredth time, then shifted his eyes to the viewport, feeling the despair well within him.

"Trouble?" Trig had come up behind him.

"Lost—for the time being," Burke snapped.

"Lost?" The UDT man sounded bewildered.

"Lost," Burke repeated. "Can't get an optical fix. Nothing but clouds." He looked at the silent squawk box and growled bitterly: "A helluva lot of good we're getting from that thing."

Chartain, who had been feeding data into the tape recorder, lifted his head placidly and snapped off the machine.

"But we're in orbit—at least as far as speed and altitude are concerned." He made a question of the statement.

"Correct," Burke admitted. "The auto pilot is set to correct for any deviation in speed or altitude when the *Argus* is not under controlled guidance. But the devilish part is, we don't know where in orbit, or even our exact inclination from the equator. We're on a guess course. All we know is what the chronometer tells us. So far we've lost a turn and a half. That's two hours and twenty-four minutes, and we'll lose at least another half turn before ground can put us back on course. A rough approximation is no good. We have to be absolutely precise . . . and that we're not."

"Well, we'll just have to sit it out. We're a cinch to pass over a tracking station soon, then we can get repositioned," Chartain reasoned.

"True," Burke glanced at the chronometer, "only we can't afford to louse up the schedule. Any delay on our part means replotting the orbit to contact the other satellites—to say nothing of meeting the *Moth*. Its schedule will have to be replotted, too, and each replot increases the chance of error."

"Well, if it can't be helped . . ." Chartain smiled encouragement and turned his recorder on again. His voice fell into a methodical murmur. Probably telling ground I'm a psycho, Burke thought irritably. He wondered if his companions really understood their situation. Their schedule allowed so much time, dependent upon so much fuel, so many supplies—and no more. It called for being at points x-1, x-2, x-3, and x-4 at the proper x-time, with no room for error. But they had already lost over a full turn, to say nothing of the wasted fuel.

He sucked his lip, watching the sweep hand of the chronometer tick off the minutes. Trig remained by the viewport for a little while before retreating to his acceleration couch, and Burke took his place at the quartz window. The world was a mass of cloud, formless and multi-hued gray in which seas and continents alike were lost. Once he glanced back. The UDT man's face had assumed its blank look; his eyes were far away. Escape, Burke thought bitterly. Chartain could escape by talking into his damned recorder; Trig by day-dreaming. But him? He was stuck. He cursed silently, thinking he should have been one of the passengers instead of combination pilot-navigator-captain-jack of all trades-space pioneer. Then he could lie back like Trig and let the troubles breeze by, or feed a lot of gobbledegook about oxygen consumption and relative humidity into a tape recorder. He fretted while the sweep hand of the chronometer moved relentlessly on. The world spun beneath.

After a while he sat down at the controls and reconsidered their plight. The *Argus* was a micro-environment structured to support and maintain human life in the temperatureless radiation fields of absolute space. It contained twenty-liter liquid oxygen converters capable of producing over sixteen thousand liters of breathable gas each, to assure an adequate supply for their mission. Fifteen turns at most. No more. That was their absolute margin of safety—the point at which life ceased and death took over. That was their margin of safety—providing no hitches occurred. But that was the catch; a hitch had occurred. They'd shot a turn and a half, would shoot another half turn at least. That was the best they could do; but it wasn't good enough.

His eyes roved uneasily. Aneroid barometers monitored cabin pressure, pre-set to actuate devices which in turn would release oxygen into the cabin should a leak occur. Concealed fans circulated the air to keep it from stagnating. Intake ducts sucked the used air into a purifier where chemicals removed respired carbon dioxide, water vapor and trace toxic gases. Fresh air was automatically added to the cleansed air and the whole was spewed forth into the cabin for use again. Small magnesium perchlorate pads absorbed excess water vapor and maintained a safe relative humidity. Microphonic impact counters measured the erosive spatterings of micro-meteorites against the rocket's thin outer shell. Other counters measured intensity of the radiation sink through which they traveled. All in all, the *Argus'* space cabin was a man-made world—a universe of applied mechanics and electronics, a total function absolutely dependent upon the reliability of its individual hundreds of thousands of parts. All that—but nothing to put them back into orbit, Burke reflected bitterly. Nothing to recoup lost time. Nothing to stop the relentless hand of the chronometer from whittling down the precious minutes; nothing to stay their blind rush through orbit. They were, he decided, somewhat in the position of a blind man in a rowboat in the middle of the Pacific trying to find the Golden Gate. He got to his feet and looked earthward. It was a bed of steel-gray clouds and they were rushing into the night.

He thought it inconceivable that so much had transpired in so short a time. They had been fired into space, found and neutered *Spy Eye*, gelded Big Head One, circled the earth seven times, all in a little over eleven hours. Eleven hours since the box had tried to crash the *Argus;* eleven hours since they had blasted upward on wings of flame. It seemed more like eleven years. In that brief period he had grown old; or at least he felt that way. A former skipper of his had once told him he had aged twenty years during a single mission over Germany during War II. He had laughed at the time. Now he knew exactly what his skipper had meant. Gay, carefree Burke who loved the roar of jets . . . an old man. He heard movement behind him and turned. Chartain had come up and was standing at his shoulder. They stared out the viewport a moment, then Chartain drawled softly:

"No use worrying. Why don't you rest a bit, conserve your strength? There's a hard push ahead."

"Sure, that's easy to say," Burke snapped bitterly. "Do you advocate escape . . . like that?" His head indicated the recumbent form of the UDT man.

Chartain glanced back and shrugged. "It's an adaption . . . and who's to say that it's not a good one. We don't all adapt in the same way, you know."

Burke accepted the reproof without comment. Maybe the doc was right. There was nothing Trig could do during their aimless whirl through space. Perhaps he was wise to rest and dream, rid himself of his worries and conserve his strength for the trials ahead. One thing was certain: when Trig's time at bat came, he'd have to be steel nerved. Disarming hydrogen bombs was no job for a jittery man. Definitely, Trig had to conserve his energies.

"I'm going to loaf it out," Chartain said suggestively. Burke nodded without turning from the viewport. After a long while he glanced back at the chronometer.

"The Moth is dead . . . The Moth is dead . . . The Moth . . ."

Burke cursed savagely and cut the communicator off with a swift sweep of his hand, then looked belligerently at the doctor. Chartain's expression didn't change and his voice, when it came, was languid.

"Don't care for the program, myself," he said. He looked back down at his instruments. After a moment Burke sheepishly turned the communicator back on but the voice was lost, only the cracklings remained. He stood, looking earthward, lost in thought. All at once it struck him that the cabin air was stale, flat. He turned back to Chartain. The doctor sensed his question and said:

"A little heavy on the carbon dioxide . . . but safe."

"Something wrong with the equipment?"

"No—I don't think so. At least there's nothing to worry about. If it climbs much above three percent, we can suit up, evacuate the cabin air and start over again, but I'd rather conserve oxygen as long as we can."

Burke nodded, thinking that conservation of oxygen might soon be their prime problem. Oxygen and fuel. Their safety margin was growing slimmer; might evaporate altogether. Trig spoke up suddenly.

"We can take four or five percent for a while . . . if we have to."

Chartain nodded agreement. Trig began recalling some of the oxygen problems he had encountered in underwater work and Burke felt his tensions beginning to melt away. The UDT man was spinning a yarn about some near escapes he had had when the squawk box cracked to life. Burke leaped to the mike thinking that the squawk box made the most wonderful music in the world. The noise spectrum rose, clacking through the speaker, filling the cabin with the snap of static. A voice came in, almost masked.

"Float Boy India calling *Argus*. Float Boy India . . ."

"*Argus*. I read you. Come in," Burke responded immediately. The voice sparked louder. He made out the words *direction to orbit* and automatically turned on the recorder. The voice died away, the static rose and fell; there was a brief pause before a second voice began giving the much needed data. The static field began rising again, masking the voice until, finally, only the poppings of space remained.

"I think we got it all," Burke said, looking at the recorder. He glanced at the chronometer. "Plently of time to play it back before we move this baby."

"See," Chartain said, "I told you not to worry."

"Except that we lost a lot of valuable time. That means they'll have to replot our schedule."

"That's what computers are for," Trig joshed, "to help poor erring navigators who can't tell their orbit from a hole in space."

CHAPTER 11

TURN TEN. DAWN OVER the Mediterranean, moving onto the coast of Cyrenaica, shooting toward the Libya-Egyptian border. The *Argus* hurtled down over the Sudan, Ethiopia, the Somaliland, over the Indian Ocean with Madagascar passing off to one side. It skirted the Arctic Circle and twenty-four minutes later was storming northeast above the South Pacific, and night. Ahead lay the West Coast of Mexico.

Burke fretted at the idleness, the time spent waiting, minutes that were eating into the scant time allotted for completion of the mission. They had already used up over fourteen hours, well over half the maximum time they could remain in orbit; but they still had two hydrogen bombs to go—and the *Moth* trip down. He waited and cursed softly. It seemed years before a voice finally sparked up through the ether, over-riding the static. He had barely acknowledged before the voice resumed its metallic drone:

"Computers affirm present course. Navigation directions for mission profile will follow immediately. Acknowledge . . ."

"Affirmative." Burke flipped the recorder on as course and steering data schedules started coming in, read in the impersonal voice of a man quoting the latest stock market transactions. The droning came to an end and the voice rose again:

"Stand by for the fan."

"Roger." There was a brief pause followed by a faint but unmistakable voice. Rikeman, on the island, had been cut into the communication network.

"Burke. . . ?"

"Yes, sir."

"We've got a complication. Do you hear me?"

"Affirmative." He drawled the word slowly, thinking he wasn't going to like what he'd hear. "Shoot," he added.

"The enemy launched another satellite this morning—caught Intelligence flat-footed. We've got it pinpointed . . . in the general space of Big Head Two. Same speed, altitude and orbital inclination."

Burke digested the information before replying. Finally he said: "Two warheads so close together? It doesn't make sense."

"No, it doesn't—if it is a warhead."

"What else?" Burke shot back. He felt a sense of dread mingled with irritation and wished the colonel would quit quibbling and tell him what he knew.

"That's the enigma . . . but it can't be any type of proximity weapon or it would have destroyed Big Head. At least we don't think it could be," he added musingly.

"So. . . ?"

"Frankly, we don't know what it is," Rikeman admitted. "We can't even make an educated guess." His voice trailed away.

"What are their relative positions?" Burke queried, feeling the information might be a clue to its purpose.

"The newcomer is leading Big Head by a scant few miles—a remarkably narrow margin. Its code name is Leech, by the way."

"Sounds apt," Burke grunted. "Will our position be relative to it?"

"We hope to place you somewhat behind the bomb, give the maximum distance between you and Leech—a safe procedure, I think. You'll have to maneuver as you see fit until you can ascertain its nature. Only try to conserve fuel," he added. "We didn't foresee this contingency."

"Will do."

"You've already lost two turns," the colonel said, in a voice of reprimand. "You're going to have some fuel and oxygen problems before you're through."

"You're telling me."

"I'm reminding you."

"I don't need reminding," Burke snapped, "we've got gages."

"The forward stations will inform you if anything new breaks in the next few minutes." The noise spectrum rose and masked his words, then fell again and his voice came back, high-pitched against the static:

"Don't believe that propaganda about the *Moth,* Burke.

It's alive, ready to go . . ." The static crackled louder. "In the meantime . . . have to . . . own judgement . . .' The speaker burst into a wild cacophony and his voice was swallowed up in the background.

"Yeah, use your own judgement," Burke said drily. He turned the power down and swung thoughtfully toward his companions. "Did you follow that?"

Chartain nodded, his face grave. "I don't like the sound of that second baby."

"Neither do I but I can't figure it out." Burke glanced at Trig but the UDT man didn't offer any help. "It would seem senseless to have two warheads monitoring the same territory . . . unless they could be projected into separate and different re-entry orbits," he added. Trig and Chartain nodded agreement.

"Like Rikeman suggested, it couldn't be any type of homing or proximity missile or it would have destroyed Big Head," Burke pursued.

"But it has a purpose," Chartain persisted.

"Yes, it has . . ."

"And that purpose has to do with us."

"Sounds reasonable," Burke assented.

Trig spoke up: "Let's look it over . . . see if it's loaded. It may be another *Spy Eye.*"

"Could be." Burke sounded dubious.

"Sounds reasonable," Chartain reflected aloud. "The enemy might be using it to find out just what we are doing."

"It would be more reasonable to destroy us," Burke argued.

"Yes, but maybe they can't. At any rate we'll have to look it over." Chartain sucked his lip nervously. "Frankly, I don't like it."

"Just something else to jimmy up the schedule." Burke shook his head disgustedly. "Time is getting short. I'd better start playing back the tapes."

He turned on the recorder and made himself comfortable at the controls, wishing he had a smoke. A voice on the tape began droning their course and steering rocket schedule. He played the tape several times, then snapped off the recorder and waited, watching the chronometer out of the side of his eye. When the sweep hand indicated two minutes to go, he unlocked the safety on the firing keys, positioned his fingers and waited.

The orange caution light winked. He tensed, the baleful red came to life with a series of flashes and he touched down gently, pressing the keys in accordance with the taped directions. Nothing appeared to change beyond the viewport, but his body sensed the change in acceleration. He waited, surprised at his calmness, and wondered if, after all, the task of jockeying a satellite through space could become as routine as flying a jet. It seemed so. He studied his hand. Steady—steady as a rock. No sweat. He sniffed—the air was heavy and stale despite the circulating fans. It would be better to blow the cabin air out and freshen it up with a new supply, he decided. It would even feel good to get out into space again, be free to move his body—the heady sensation of swimming. Only he wouldn't be able to leave the cabin; he'd have to stick in the *Argus* while Chartain and Trig did the playing, if one could call disarming a hydrogen bomb play, he thought grimly. He watched the chrono until it was nearly time to fire the thrusters, then riveted his attention on the indicator lights. The orange light blinked, and when the red signal flashed he pressed the keys, feeling the *Argus* buck gently against its own headlong flight. After a moment he fired the light steering blasts to nudge the *Argus* back into orbit. While he was doing it, ground came in with a report on the new satellite. Negative. *No further information.* That was the sum and substance of what ground had to offer. He listened without comment. Plainly he was on his own. Well, they'd cut Big Head Two down to size, then give Leech a look-see. Action would depend upon what they found. At best it would take some of their valuable time and fuel. At worst? He mulled over the possibilities while studying the radarscope. A communication link? Another bomb? A missile intended for the *Argus?* He tried to think of some other alternative but couldn't.

Big Head Two and Leech came to life as two blips on the radarscope. So far so good. He looked earthward. According to schedule they should be passing the tip of Greenland. If they were, it was lost behind its thick facade of cloud. He glanced again at the chronometer and glued his eyes to the optical scope, monitoring space for any sign of the enemy satellites. Not yet. Big Head Two and its mysterious companion weren't visible. Miscalulation? Perhaps they were too far astern of the bomb. He looked at the radar altimeter, checking altitude against time. Right on the button. He briefly studied the keys and gave another touch on the stern rockets, watching the twin blips on the radarscope. A second later he touched the deceleration keys and made sure the satellite and its companion still registered on the radarscope, then made another visual check. There was still no sign of Big Head, nor of its companion.

He fired the stern rockets again, waited briefly before touching the deceleration rockets, conscious he was sweating. This was the kind of thing he wasn't supposed to have to do, the kind of thing that could get them in real trouble, he thought. If he got lost once more, they were done for —their mission kaput. He looked at the chrono again then quickly rose and stared earthward. Enough of the British Isles was visible through the cloud patterns to identify.

He studied the instruments and radar altimeter, then made a hairline correction with a blast from the hydrogen peroxide thrusters, conscious that his hand was trembling. Below him France was vanishing and the Western Mediterranean was coming up crystal clear. Suddenly he saw Big Head Two; saw it on the scope.

Turn eleven . . .

Five a.m. Greenwich Clock. He got back on the optical tracker and peered again into the sea of night. There it was—either Big Head Two or its mysterious companion. But it had to be Big Head, he decided. Leech would lie beyond it, unless he was more fouled up than he knew. He studied the scope. The satellite was drifting off the cross-hairs, and he made slight corrections with the steering rockets, then studied the scope for further deviations. He was concentrating on the satellite when the radio cracked to life, snapping him to attention. The voice came in suddenly, curiously chant-like:

"The Moth is dead . . . The Moth is dead . . . The Moth is dead . . ."

The words drifted out of the speaker with a strange funereal quality.

"Beamed up from the Middle East," Chartain guessed. Burke grimly nodded agreement.

"They must have hired an undertaker," Trig said nervously. "He sounds like a first rate gloom artist."

Chartain nodded. "The psychological approach."

The voice repeated its doleful message until finally it receded into the noise spectrum and was lost, but Burke felt the refrain continue through his brain: *The Moth is dead!* He shook his head. No, the *Moth* was alive, sitting on the pad—waiting, he told himself. That was one thing he knew, had to know. There WAS a *Moth*—it WOULD come up. It would rise from earth and intercept them in orbit, and they would ride it down again, just like Rikeman had foretold. He became aware that Chartain was eyeing him curiously and said defensively.

"Don't worry, I don't believe it."

"The *Moth* is alive . . . or Rikeman would have told us," the doctor emphasized quietly. Burke nodded and turned back to the optical tracker. The satellite rode serenely in space. He studied the keys and began making minor corrections, careful to keep the bomb in his scope.

Big Head Two came into view out of the sea of darkness, a menacing blob barely discernible from the forward port. Somewhere beyond the bomb, still unseen except as a blip on the radarscope, was its mysterious companion. The newcomer bothered Burke more than he cared to admit. Big Head Two was a known factor, dangerous but understood, but Leech was a complete enigma, an unknown equation in Operation Spacecomb. As such, it represented a variable which might well change their entire operation or, more probable, he brooded, wreck their already fouled up time schedule. Big Head Two seemed to float toward them out of nowhere, a formless shape which rapidly took on a definite configuration until it resembled some bizarre submarine plying the depths of space. Burke watched it with a feeling of unease which seemed to pervade both mind and muscles. There was a faint tingling in his arms and fingers and the sensation of something crawling at the nape of his neck. He shook himself, angry at the reaction, but the unease persisted. There was a sinister quality about the monster ahead which he couldn't dispel. Trig spoke softly:

"A twin of the other one."

"We hope." Chartain sounded less optimistic. Burke disregarded their comments and busied himself with minute corrections until, finally, the bomb rode serenely in the cross-hairs of the scope. Satisfied he was right on, he turned to his companions.

"We have a fast decision to make," he told them. "I think we should try and proceed on schedule; that is, disarm the bomb before we tackle Leech. Anyone got any ideas on the subject?"

Chartain pursed his lips thoughtfully. "Seems like a good idea," he said finally, "only . . ." He let the words trail off.

"Only what?"

"Only I can't figure Leech out. Its purpose must be . . . in some way . . . to protect the bomb. I have the feeling we're putting our head in a noose." Burke nodded agreement.

"Counter-missile?" Trig queried.

"Perhaps. At least if we assume that's its purpose—and it seems reasonable—then it follows it has a method, some means of attack," Chartain said thoughtfully.

"I've been plagued by the same idea," Burke admitted, "but I can't see any profit in tackling Leech first."

"Not a thing." Chartain was emphatic.

"Then let's go," Trig exclaimed. "Personally I'm getting jittery sweating this one out. I'd feel better pulling that baby's fangs."

"Precisely how I feel," Burke decided. "We'll work Big Head over, then take a gander at Leech. We'll work the same as before, only this time I'll keep monitoring Leech on the scope."

"Good idea," Chartain gravely agreed.

Burke told them: "If I see anything . . . or give any sudden orders . . . don't stop to quibble. There won't be any decision time left."

"Not this boy," Trig exclaimed. "I'll obey you like you were a four-striper."

"Okay, then let's get going," Burke said, relieved that the decision had been made. The prospect of action felt good. Chartain and Trig hurriedly pulled down their sleds and checked their weapons. Burke closed his faceplate, pressurized his suit and, when the others were ready, checked to make sure the intercoms and heating elements were operating satisfactorily. When everything seemed in order he moved to the hatch, braced his body and opened it, holding himself against the blast of escaping air. He stood for a scant moment watching the planet far below. Earth. It seemed almost alien, he mused. Somewhere down there beneath the blanket of cloud lived men like himself—lived and worked and loved. For a moment he wondered if he had actually come from the weird cloud-covered plane of darkness that sprawled at his feet. It seemed more like someplace he had heard about rather than anywhere he'd actually been. It was a strange world—far away. The mood passed quickly and he turned back, stepping to one side to let his shipmates through the hatch.

Trig moved out first, stepping into space and fitting himself on his sled with a single graceful movement. His frogman training obviously had fitted him for this vast sea in the skies, Burke thought again. Chartain followed more slowly, having the usual difficulty to get himself positioned. After they had gone he closed the hatch, repressurized the cabin and opened the oxygen valve to deflate his suit. When it hung limp against his body he unlocked the faceplate and returned to the control panel, checking the radarscope while he did so. The exhaust rockets of the space sleds were small lights winking in the distance, eerie and faint, like the passage of two fireflies in a midnight jungle. Only their movement distinguished them from the stars. Beyond them lay the shadow of the bomb, a menacing silhouette against the lanterns of the sky. He watched the sled lights spark in the distance, then returned his attention to the radarscope. Leech was a mere blip, a glowing spot on the face of the tube; yet, somehow, he felt Leech and not Big Head was their chief danger. The bomb might be booby-trapped; beyond that it offered little more than a technical problem to be solved, nothing that was beyond Trig's knowledge or ability. Leech on the other hand was completely baffling. Its purpose? He turned the problem over in his mind and always came back to the same answer: a weapon. Leech was a weapon, a means by which the enemy hoped to protect Big Head Two, destroy the *Argus*. But its means? He wished he knew. One thing was certain: the *Argus* had no means of defense. It was a sitting duck, unless it chose to flee into the maw of space; but that meant losing schedule—disaster.

He turned back to the viewport. The winking sled lights disappeared. Trig and Chartain would be coasting now, decelerating, closing in on the bomb, Trig with graceful movements, Chartain with awkward control. An instant later the beam of a hand torch splayed over the surface of Big Head Two, pinning it against the sea of night. Its white and black surfaces gave the odd illusion that its two halves lay at different distances in space. Trig's voice came through the phones:

"She looks the same, at least externally." He sounded relieved.

"Good."

"I'm going ahead."

Chartain cut in, "How's Leech?"

"No change. Maybe Trig's guess was right and it's just another *Spy Eye*. At least it's not any type of proximity weapon."

Chartain's answer was a grunt in his ears. He glanced at the radarscope then back toward Big Head, trying to discern Trig's form against the hull, now lighted by the doctor's torch.

He strained his eyes and against the darkness. No use, the distance was too great. An occasional word came over the phones to keep him abreast of their progress. He glanced at the scope—glanced, and froze . . .

Two blips! No, a second blip separating from the first. Rocket? Missile? He forced himself to calmness while he studied the blip. No, it was moving far too slowly. Spacecraft? Sled? That was it! He reacted automatically.

"Chartain!" His voice was an imperative rasp over the phones.

"Roger," the doctor replied tautly.

"Head back as quickly as possible."

"Coming," Chartain barked.

"What's up?" Trig asked worriedly.

"Another craft moving out from *Leech*," Burke snapped. He hesitated, wondering whether or not to order the UDT man to return. Perhaps Trig had time to finish the job and get away; or he could order him back and put the *Argus* to a safe distance until they found out what the enemy was up to. But that would shoot their schedule. Trig solved the problem for him.

"I'll have this baby decommissioned in a moment. Keep me informed."

"Good boy. Will do." Burke studied the scope, deciding the strange craft was probably some sort of sled, probably very much like their own. More men in space! Odd that technical breakthroughs seemed to occur so simultaneously in the two opposing sides of the world. He made a quick calculation of the distance between the sled and Big Head Two and decided Trig had a little leeway—some, but not much. The forward deceleration rockets of Chartain's sled were spitting fire against the night. Burke hurriedly snapped his faceplate shut, pressurized his suit and opened the hatch, almost being sucked into space by the escaping air. Not a moment too soon.

The doctor's sled bumped the hull to one side of the hatch and would have careened off had not Burke reached out and grabbed the edge of the bobsled-like nose, desperately hanging to the hatch combing as he did so. He helped Chartain through the opening and dragged the sled in behind him, barking their situation while he sealed and pressurized the cabin. He hurriedly let the pressure from his suit, opened his faceplate and sprang to the optical sight. The newcomer was in view but he could not discern its nature. Whatever it was it was bearing down fast on a course taking it directly toward Big Head Two.

"Not much time," he snapped into the phones.

"Almost got it," Trig grunted. The sled drew uncomfortably close and Burke tersely informed the UDT man of the situation. Trig's voice came back in a rasp:

"This baby's different inside. Not like the first one." Burke froze. Booby-trap?

Trig rapped out: "Can't be booby-trapped or they wouldn't be attacking us. I'm going to disarm it." A second later he added: "Better fire that clunk up and get moving. I have an idea they're loaded for bear."

"We'll start toward you."

"Don't do that," Trig ordered. "Stay clear—get the hell out of there."

Burke glanced at the scope, then stared into space while Chartain crowded his shoulder.

"I see it," the doctor exclaimed. Burke saw the other craft at almost the same instant, or rather its deceleration rockets. He started to shout a warning when the UDT man's voice pinged in his phones:

"Got it!"

Burke nudged the power keys to move the *Argus* toward him when his voice came again, sharp and abrupt:

"I'm scramming. You'd better pour the coal to that baby and shove off."

Chartain's exclamation brought Burke up short: "What's he doing?"

Burke pulled his hands from the power console and spun toward the port. Flame winked from the acceleration tubes of the UDT man's sled. It took him an instant to realize Trig was jetting upward on a course perpendicular to the incoming enemy sled.

"Don't waste time on evasive actions. Get back here," Burke snapped.

"Not enough time. They'd nail us before you could take me aboard."

Burke swore under his breath. Damn, they had little enough time without wasting it arguing. He called again. Silence. Burke swore roughly into the phones. The voice that came back held a desperate ring:

"Get the *Argus* out of there. Those people aren't just coming for lunch!" A few seconds later he added: "Large sled—looks like a couple of people on it."

"Get back here," Burke commanded angrily.

"I know what I'm doing."

Burke cursed luridly, then grated: "Trig, I'm giving you a direct order. Get back here."

"Can't hear you. Something's wrong with my phones," Trig answered flatly.

Burke swung toward the port. Trig's sled was a weak light blinking in the distance, moving upward at right angle to the *Argus*' heading. A search beam shot out from the pursuing sled, bright, near, swinging in a huge arc in space; it found and pinned the UDT man's sled. Harsh lances of flame spat from the nose of the enemy sled, lacing toward Trig.

"Rockets!" Chartain exclaimed incredulously. "It's armed with rockets."

Burke breathed heavily and hit the propulsion and steering jets, throwing the *Argus'* nose into a course which would take them wide of both Big Head Two and the sled from *Leech*. Fuel—fuel he couldn't waste, he thought; fuel that would be as precious as gold before the end of their mission—as precious as life. Nevertheless he hit the thruster keys hard and played the steering jets from hunch.

"What are you doing?" Chartain nervously asked.

"Trig out-maneuvered their rocket fire. I'm going to try to intercept that fool . . . guessing he's cutting a circle course. I just hope they haven't many missiles left."

Chartain warned: "We'll lose orbit."

"We've already lost it, but it can't be helped. Trig was right. The *Leech* is probably armed, or at least will have another warsled. We gotta steer clear, but I'm going to risk getting close enough to intercept him when he comes around." Burke bit his lip. "Keep your eyes peeled."

Chartain didn't reply. His eyes were glued to the port. After a moment he said worriedly, "You can't keep track of anything the way we're moving. I've lost orientation." He glanced at the radarscope. "But he's on the scope; they both are."

Burke quickly sized up the situation. The enemy sled was behind Trig, moving erratically, having trouble getting him lined up for another salvo, he thought. Newton's law again—their rocket fire had abruptly decelerated them, giving Trig time to gain a substantial lead. Now his sled was carving a flame-arc through the sky. But the enemy sled was more powerful; it was cutting the distance again, closing in on Trig's tail. Its powerful beam flashed on again, sliced through the night and found and held Trig in a circle of light; then his sled seemed to slip sideways out of it.

"Trig!" Burke spoke imperatively into the mike.

"Listen to me," the Navy man suddenly replied, "that battlewagon behind me just about wiped me out with that rocket blast. It's a damned armed expedition, but it'll be as helpless as a kitten without the *Leech.* That's the baby we got to get before the whole operation's fouled up. Just keep clear."

"Trig."

"Adios." Silence. Burke looked impatiently at the optical scope, trying to formulate a three-dimensional picture of what was happening in space.

"What's going on?" Chartain asked uneasily.

Burke bit his lip and looked out the port before replying: "I think Trig's trying to lure the other sled so far into space that it'll either run out of fuel or get lost." He hesitated. "No—that's not right. The *Leech* could find 'em."

"Then what?"

"Damned if I know." Burke returned his attention to the keys and scope in turn, then finally to the port. The *Leech* was visible now—a cylindrical blob against the ebony curtain of night. The course he had taken had brought the *Argus* in a great half-circle approaching the *Leech* from its stern. Not that it makes any difference, he thought. Its radarscope had long since pinned them. He bit his lip and decelerated, trying to figure Trig's strategy. His sled was coming in now—had completed a huge elliptical maneuver and was plummeting down. To intercept him, Burke would have to move even closer to the *Leech.* Danger—it crackled in his mind. They were already too close to the *Leech;* there was something ominous about the drifting form ahead.

Flame spurted from the *Leech's* stern tubes and simultaneously Burke saw a second flame in the sky. Trig's sled was coming down, hurtling under full power in a kamikaze dive, accelerating under the full blast of its stern tubes. He's moving too fast, Burke thought. He froze. The *Leech* had fired its rockets too late. Trig streaked down; the sky burst into a hard flash of flame before the darkness returned.

"Trig!" Burke uttered the name too late. Chartain stared at him white-faced.

"He crashed it!"

"Yeah, crashed it," Burke echoed. Suddenly he caught sight of the second sled hurtling down and jammed his fingers hard on the acceleration keys. The *Argus* leaped ahead just as lances of flame stabbed out of the darkness. He held his breath, pushing the *Argus* into a wild erratic maneuver, hoping he was in time. Chartain watched wordlessly. A split-second later Burke straightened his course and plunged blindly ahead, sensing the pull of weight against his body. He continued onward until the enemy sled was lost in the radarscope, then said, as if talking to himself:

"Its hull was necessarily paper-thin."

"He killed himself," Chartain breathed.

"Killed the *Leech* . . . saved us," Burke corrected. He studied the scope and touched the deceleration keys gently, then began nudging the *Argus* around. After a while the *Leech* appeared on the radarscope and, finally, in the viewport.

"How about the other sled?" Chartain asked uncertainly.

"Not on the scope. It's safe," Burke replied woodenly. "They're out in space somewhere—but they'll be back. Keep your eyes on the scope."

The *Leech* grew in the viewport, no longer a cylinder but a formless mass torn against the skies. Particles of matter floated around it, gradually moving farther away.

"We've got to get Trig's body—take him home," Chartain said.

"Not out of that wreckage," Burke replied softly. "Look, his sled's half-buried in the hull."

"But we can't leave him here in space. We've got to try," Chartain insisted. Burke studied the scope before turning to the side port; far off in the void a flame winked erratically.

He said cryptically, "No time. The sled is returning."

"We've got to try . . ."

"No," Burke gritted harshly, "our job is to get out of here . . . complete the mission." He punched the power keys viciously, feeling the *Argus* leap ahead. He then turned toward the space doctor.

"Isn't that what Trig died for?"

Chartain didn't answer. He moved closer to the port, his eyes following the receding wreckage of the *Leech:*

"Good by, friend," he said simply.

In short time Big Head Two, the wreckage of the *Leech* and the enemy's missile-armed space-sled were mere pips on the radarscope. Finally they vanished altogether.

CHAPTER 12

TURN THIRTEEN . . .

Eight-twelve a.m. Greenwich Clock, 33 north latitude, 48 west longitude, over the North Atlantic—if they were on course. But they weren't. Burke gazed moodily down at the sea of cloud, his face gaunt and drawn with fatigue.

One part of the gray blanket covering the earth lay bright in the sun; the remainder merged with the night, lost to sight except as a coal-black maw which erased the stars. Twelve full turns had been completed, somewhat over nineteen hours had fled into eternity. Nineteen hours during which *Spy Eye,* two hydrogen bombs, the *Leech,* the rocket-armed enemy sled and Trig had died. Death in space. He had read many such stories as a boy—how many years since? —but now the era was here. War in space. It wasn't as glamorous as it had once seemed. He shuddered at the thought and returned his wandering attention to the instrument panel.

He tried to keep his eyes focused on the instruments but, somehow, the dial faces seemed to be moving, an odd swaying motion that made it all but impossible to fixate their numerals. After a while he leaned back and closed his eyes, feeling the fatigue seep through his body, enervating both mind and muscles. Once or twice he shook his head to clear the drowsiness and forced his eyes open. No time to fold, he told himself. There was still Big Head Three . . . and the *Moth.* That would be the toughest part, maneuvering down through the hell of energies that separated them from earth. And they'd lost another turn, or more. Rikeman would have to replot *Moth's* orbit. *The Moth is dead . . . The Moth is dead.* How many times had he heard the refrain? Time . . . time. It was streaming past, rushing into eternity with appalling speed. Time and fuel. Both were woefully short.

He turned in his seat, facing Chartain. The doctor was crouched over his recorder, his face looking gray and tired. He sensed Burke's look and lifted his eyes, snapping off the recorder as he did so. They regarded each other across the short span of the cabin for a long moment before Chartain spoke.

"How are we doing?"

"Lousy. The schedule's shot and we're off course, both." He hesitated. "We should be cutting down the South Atlantic . . . should come up through Western Australia, across the tip of New Guinea. There's a station near Adelaide . . ."

"If we're anywhere near course," Chartain mused.

"Fuel and oxygen are dangerously low. We can't maneuver this baby much," Burke warned.

"Yeah, I know." Chartain glanced at the oxygen and smiled wanly. "I don't think we'll have enough oxygen to hold out all the way."

"But enough to handle Big Head?" Burke made a statement of the question.

"I think so, if ground puts us back on course soon enough."

Burke nodded, and returned his attention to the panel, beset by the feeling that things were closing in. Lost, low on oxygen, fuel, Trig dead, no certainty that they'd be able to contact the *Moth* even if they did manage to stretch fuel and oxygen far enough; and there was still Big Head Three. It was beginning to look as if the graveyard of space was getting populated overly fast. Trig, an unknown number in the crew of the *Leech* and maybe, soon, the remainder of the *Argus* crew. He shook his head to banish the thought. Come out of it, boy, he told himself. One thing at a time. You're going to tame Big Head . . . ride *Moth* down in a blaze of glory. Yeah, he thought, only it didn't sound convincing.

According to the chronometer, Australia should be wheeling past, lost beneath the clouds. They should be cutting obliquely over the Big Pond, over the tiny Caroline, Marshall and Wake Islands. The first major land mass coming up would be Alaska—if they were anywhere near course. He cursed the clouds which prevented any optical tracking, waited nervously, impatiently watching the minutes tick off, feeling the tension mount within him.

Somewhere on the broad expanse of water below, Navy trackers were sweeping the skies. He pinned his hopes on Wake tracker. If that failed, SMEWS—the guardian of the north—most certainly would pluck the micro-mote of the *Argus* out of the sea of space. He was mulling it over when the radio chattered to life, sputtering for a moment before he caught the first whisper of a far-away voice.

"Wake tracker calling *Argus* . . . Wake tracker calling *Argus* . . . Wake tracker . . ."

Burke flipped the mike to his lips: "*Argus* to Wake tracker. We read you. Come in, Wake tracker."

"You're off course," the voice on the radio said.

"You're damned tootin' we're off course. Get us back on," he roared. He looked backward at Chartain and gritted: "There must be an imbecile down there." .

Chartain looked hopeful but merely said, "The recorder on?" Burke nodded affimatively.

"Directions to target," the faint voice droned. While the data was coming in, Burke grinned at Chartain.

"Got it whipped."

Chartain winked. "Won't be long now."

The distant voice became clearer. When directions were finished, there was a brief pause and a stronger voice came in: "Stand by, *Argus*. We're cutting Sandlot into the fan through the Navy relay."

There was another brief pause punctuated by waves of static during which two or three different voices acknowledged the continuity of the transmission system lying between the *Argus* and the far-away island where Rikeman maintained his headquarters. Burke thought it was like placing a long-distance call across the nation. After a few more bursts of static Rikeman's voice came through the speaker like the tinkle of a distant bell.

"Burke. . . ?"

"I read you."

"You're away behind schedule."

"You're telling me," Burke replied testily.

"One of the trackers relayed your automatic transmission about Trig. I'm sorry."

"Yeah," Burke said simply.

"We hadn't anticipated a manned vehicle." His voice fell away and Burke remained silent. "But there's hell to pay down here," Rikeman resumed.

"There's hell to pay up here, too."

Rikeman disregarded the jibe and said: "Intelligence reports intense activity at all enemy air and missile bases and their subs are coming down from the north like sardines. A strike seems imminent."

"What about SAC?"

"Aloft . . . with everything in the arsenal, just waiting the word. So are the missile batteries; and the Navy's polaris subs are positioned, waiting, ready to let 'em have it. We won't be sitting ducks," Rikeman rasped grimly, "but neither will it be a pretty world if it comes to that."

"Looks like I'm in a safe spot," Burke retorted, sarcastically.

"There's no time for levity," Rikeman reprimanded. "Now hear this. The enemy apparently isn't certain of their status . . . up there. Or if they are, they feel their strength plus the destructive power of Big Head Three is sufficient to tilt the war in their favor. They're banking on that, Burke."

"Let 'em bank."

"But if Big Head Three's put out of commission, the odds will be against them. In that case, no war. I'm only guessing but that's the way it looks, and that's the way the high command has it figured."

"In other words they'll hold off until Big Head Three goes boom?"

"That seemes about it. Or until Big Head is on a target path, enough so that they're certain of its success."

"If we don't get it, maybe our anti-missiles can knock it off," Burke suggested hopefully.

"Except that Big Head carries its own anti-missile batteries," Rikeman reminded. "That's the big stumbling block. The enemy is betting Big Head can down anything we throw at it."

"That leaves it up to us," Burke stated flatly.

"That leaves it up to you," Rikeman agreed. He hesitated as if reluctant to say what was in his mind, then asked: "How's your oxygen?"

"Lousy."

"Fuel?"

"Worse yet."

"But enough?"

"Somewhat questionable how far we can stretch either of them."

"But you can get Big Head?" Rikeman persisted.

"Yes—I think so."

"Burke, there are two of you breathing oxygen in that cabin . . ."

"Certainly," Burke snapped. A split second later the implication behind the colonel's statement hit him. He felt a cold chill.

"I'll put it into words . . . or, rather, an order," Rikeman said softly. "If there's not enough oxygen to last through the next phase, then Chartain will have to abandon the rocket." The static field rose, cutting into his words until his voice sounded like some fragmentary whisper from the grave. Burke clutched the mike speechlessly. Chartain reached over his shoulder and plucked the instrument from his hand.

"This is Chartain. I think there's enough oxygen. However, I'll make a close check . . ."

"Do that." The noise spectrum crackled louder.

"If I find there's insufficient oxygen, I'll carry out your orders."

"Do that," Rikeman reiterated. There was a brief pause filled with the cracklings of space. The colonel's voice came in again, a faint whisper.

"For God's sake, get that bomb."

"Will do," Chartain shouted. They listened for a while, trying to pick Rikeman's words from the maelstrom of sound without success. Finally he faded away altogether. Burke stared at his companion for a long moment before he spoke.

"If we run short, I'm bailing out. You can take the guts out of that bomb. I can't."

"No go," Chartain flatly stated. "You heard the colonel's orders."

"The main job is to disarm the bomb," Burke retorted. "You were trained for that, just in case of such an emergency. And that's what you're going to do." He smiled crookedly at the doctor. "I don't want to have to pull my rank on you."

"Wouldn't I look fine trying to pilot the *Moth* down?" Chartain responded sarcastically.

"That's not important."

"More important than you think," the doctor drawled enigmatically. "But let's wait until we have a closer figure to go by. I'd hate to jump out of this baby for nothing."

"So would I." Burke turned back to the recorder and settled down to memorize the firing instructions. Behind him Chartain's voice began murmuring data from the environmental instruments on to the tape. When Burke finished he watched the *Argus* climb across the face of the planet, his mind preoccupied with the task ahead. Trig's face kept encroaching into his thoughts, a cheerful face that seemed to say: *It's your turn next.* Burke wondered if he could die as bravely as the intrepid Navy man had.

Turn fourteen . . .

Big Head Three was a blip on the scope. Burke quickly scanned the power keys and immediately fired the forward tubes, sensing the now-familiar feeling of slight weight as the *Argus* decelerated under reverse thrust. He turned down the cabin lights, nodded with satisfaction toward Chartain and moved quickly to the port. Moments later Big Head Three was a black shadow imposed against the stars. He studied the bomb through the optical scope, then touched the steering rockets to bring the ship into precise equilibrium between gravitational and centrifugal forces. He kept his eye glued to the instrument, conscious that Chartain was standing over his shoulder. Slowly, gradually, Big Head Three drifted away from the center line of the scope. He touched the keys again, cutting down the drift, and watched for a moment longer. The drift continued. He studied the bomb intently, measuring its movement against the vertical cross-hair of the scope. The almost imperceptible lateral drift continued. He touched the keys again without moving his eyes and after a short time saw that the bomb still drifted. He felt a surge of panic, and tried another correction —without results. No good. The steering rockets were dead, their fuel exhausted. He straightened up, letting the air exhale slowly from his lungs, aware that his heart was pounding a strong rhythm. Chartain's eyes held a question.

"Trouble?" he softly asked.

"Yeah." Burke sighed heavily, conscious of the responsibilities of command. "The steering rockets won't respond. That means the fuel's shot."

Chartain regarded him intently. "We can get Big Head?"

"We can . . . yes."

"What are the implications?" Chartain asked deliberately.

"We can't maneuver any closer to the bomb . . . and we'll keep separating, slowly, during disarming." He hesitated.

"And. . . ?"

"They'll have to replot the *Moth's* orbit. That probably means an extra turn before contact; another ninety-six minutes—if there's no hitch."

Chartain didn't answer. He didn't have to. He knew very well what Burke meant. Getting the *Moth* into contact with the *Argus* would take a trick shot, far trickier than getting the *Argus* into orbit. The *Moth* had to be boosted into space on the thrusting wings of an intricate three-stage power complex, had to projected into orbit at the exact velocity and altitude of the *Argus.* More, it had to reach a precise point in space at an exact instant of time—more exact now that the *Argus* couldn't use its own power to help close any gap which might lie between the two ships. Any instrument error, any deviation from course, any malfunction would spell disaster. Even if everything had gone all right there was still the task of stripping the rocket's shell, releasing the *Moth's* fragile body from its durable cocoon. It would be done mechanically, of course, by minute explosive charges designed to hurl the halves of the cocoon apart, splitting it down its long axis. But the delicate job of spreading its long folding wings, locking them into position, and a dozen other tasks were a two-man job. Only there wouldn't be two men. Long before then he would have to abandon the rocket to swim the death seas of space, as Rikeman had forewarned. Only now it seemed that the act would be futile, for Burke could not locate and prepare the *Moth* for its deadly descent with the scant oxygen which would remain.

"We'd better get along with the bomb before the distance gets too great," Burke suggested wearily.

"Right." Chartain closed and locked his faceplate, releasing pressure into his suit while Burke moved the sled into position near the hatch and prepared to depressurize the cabin. When they were ready, they tested their phones and heating elements, Then Chartain moved toward the hatch. Burke bit his lip.

"Take it easy," he advised, "then we'll go home."

"Home . . ." Chartain echoed the word forlornly, and faced the hatch. He opened it slowly, bracing his body against the explosive blast of escaping air, then looked downward for a long moment before stepping into space, dragging his sled after him. Burke watched his body tumble slowly in pinwheel fashion while trying to fit himself onto the sled.

"Adios," Burke called, "and good luck."

"Adios . . ." Chartain's voice was curiously muffled in the earphones. Burke closed the hatch, repressurized the cabin and returned to the control panel, noting the chronometer. Over twenty-one hours since blastoff. They were cutting down over the South Atlantic toward the Antarctic Circle. He looked through the port. Chartain had finally gotten positioned; now his sled was winking its way across the black gulfs of space, pointed toward the ominous shadow of Big Head Three. He watched until the exhaust glow of the sled became lost against the multi-colored star field. It seemed a long time before the doctor's voice rasped through his phones:

"I'm moving in."

"Standing by," Burke responded. His eyes briefly rested on the gloomy twilight of the Antarctic far below. The bottom of the world was a sea of cloud, gloomy and dark but magically illumined where it passed into the sunlight line. He returned his gaze to the black shadow of the bomb just as Chartain's torch sundered the darkness, splaying over its surface. The light created odd moving patterns of black and whit against its protruding surfaces, giving the impression of eerie twisting movement.

He watched, tense, half-expectant, yet hopeful that Big Head Three would present no unusual problems. He had confidence in the calm, stoical space doctor, a confidence bolstered by the knowledge that Chartain had spent long hours with Trig studying the dummy of the bomb. Still his unease persisted. A long time seemed to pass before the doctor spoke again.

"I've got the cover off."

"Good boy." Burke began to breathe easier. Chartain could do it. The gaunt man was assurance of a job well done—he didn't have to worry about Big Head. He looked downward. The clouds had dissipated over the South Pacific, and Australia was rushing headlong toward them like some juggernaut meteor hurtling through space. Chartain's voice broke into the earphones, "I'm going to . . ." He broke off with an abrupt gasp.

"What's wrong?" Burke burst out in alarm. He looked through the port, startled to see an odd bluish flame licking from the top of the bomb. His mind whirled for a split second before he grasped its implication and simultaneously cried:

"Chartain!"

"For God's sake, they've fired it!" The doctor's voice held a note of panic. "I felt it move."

Burke tried to keep his voice calm. "Yes, I think so. Hold it a second." He sprang to the optical sight and got Big Head Three in the cross-hairs. The bomb was moving, dropping slowly out of orbit. His mind predicted its flight path with lightning speed. It would move in a long descending spiral over the Pacific toward Alaska; but it was undoubtedly telemetered, perhaps under the control of enemy submarines . . . could be made to swing over the West Coast of the United States. Or servo functions could accomplish the same thing. It it exploded anywhere above the West Coast, its lethal fall-out would roll over the nation. The enormity of was happening shook him. Big Head Three was striking toward the soft spot in the continental defenses. It was a moment before he could speak:

"Disarm it before you shove off," he barked.

"I'm trying." Chartain's voice was a gasp.

"Hurry—you're moving out of range."

Chartain didn't reply. Burke watched nervously. Big Head Three was slowly picking up speed, moving toward its mother primary with small bursts of blue flame licking from its top. Chartain had but scant seconds.

"Hurry," he pleaded again.

"I'm trying . . ." The doctor's voice was fainter but steady, as if he had regained his calm. Burke waited a few seconds and repeated his call.

"Another moment," Chartain replied. The phantom flame licked higher and Big Head Three abruptly seemed to leap downward.

"I'm getting it." Chartain's voice was a whisper in the night. Burke raged at the dead controls. With fuel he could still snatch Chartain from the bomb; but there was no fuel. The *Argus* was dead, dead, and the distance between it and the bomb already exceeded sled range.

"Chartain!" Burke strained his eyes, trying to pick the bomb from the sea of space. He clutched the mike and called frantically: "Chartain! Chartain!" His voice was a hollow boom in the small cabin.

Silence. The great silence of space. Silence and emptiness. Big Head Three was gone, lost in the gathering night, plunging earthward with Chartain clinging to its horns—a man and a bomb. He tried the radio again and again but there was no reply. Finally he knew there'd be no reply. Ever. He turned slowly from the port. He was alone now; alone in the greatest solitude possible.

CHAPTER 13

GOT TO WARN Rikeman, Burke thought. He cast a frantic glance at the radio, momentarily bewildered. That's right, he couldn't warn him; not till he came over one of the ionospheric windows or was caught by one of the Navy trackers. By then it would be too late . . . unless Chartain had managed to disarm the bomb. He clutched at the thought and tried to force himself to think clearly. What had Chartain said?

"I'm getting it."

Those had been his exact words. But had he got it? Would he retain the presence of mind to complete the job knowing he was plunging to flaming death? He tried to assess the chances. There would be no windblast—no sense of motion, except for a slight feeling of acceleration, until Big Head Three hit the rarefied upper atmosphere. Until that fateful moment Chartain would ride the bomb through the dark calm seas of space. Under the circumstances, disarming it would be simple—unless he panicked. But he wouldn't panic. Rikeman had picked his men too carefully. Chartain would kill Big Head Three before he himself died. He hoped.

He moved to the port and looked earthward. Australia was a monster underfoot, almost free of clouds; across the Arafura Sea, New Guinea sprawled like a giant lizard on the breast of the Pacific, out where the night line lay. Somewhere down there Chartain was riding the bomb, approaching the North American Continent in a great slightly-curving path as its servos kicked it toward its target. Perhaps, even now, he was entering the first tenuous traces of atmosphere; could feel the heat beginning to rise. In moments, then, he would blaze to a charred cinder.

Burke calmly tried to assess his own position. He was racing northeast over the Pacific, would come down over Central Canada and the middle states to start turn fifteen—the final turn. He laughed harshly. But, of course, he was off course; there would be no final turn. Not for him. The *Moth* couldn't contact him. He would have to go around again, pile on another ninety-six minutes, ad infinitum. The odds seemed hopeless. He grinned bleakly. Rikeman's five percent was shrinking fast. He heard the chatter of the radio for an instant before his still confused mind realized the call was for him; it took another few seconds for him to place its origin. When he did he grabbed the mike and managed to say calmly:

"*Argus* to Guam tracker. I read you loud and clear. Give me your top brass immediately and acknowledge." He nervously bit his lip and prayed that his warning would get through in time for Rikeman to get the entire anti-missile defense command lined up on Big Head Three. He chaffed until the speaker on the other end said imperturbably:

"We're putting you through to Sandlot."

"Listen," Burke started to argue.

"Stand by," the voice curtly ordered. Burke fumed, waiting, listening to voices down the line acknowledge the transfer. He wanted to shout to them to get on the ball, Big Head was coming—get the anti-missiles up! The static rose and fell, crackled crisply and died several times before a weaker voice came in unexpectedly.

"This is Sandlot—Burke?"

"Burke, I read you."

"This is Rikeman," the colonel said unnecessarily. "Navy trackers warn us Big Head's coming in . . ."

"They fired it," Burke cut in. "Chartain's riding it down."

"Good God, it's disarmed, isn't it?"

"I don't know," Burke replied worriedly. He tersely related what had happened.

"Hold it." The colonel abruptly cut off, leaving Burke fretting on a dead mike. He was back again within seconds.

"The enemy's whole air fleet is aloft, maneuvering just beyond their borders," he tersely told Burke. "That ties in with Navy information that they've ringed us with their missile subs. They're waiting for Big Head to blow."

"What are we. . . ?"

"Ready—ready as we'll ever be," Rikeman spat grimly. "Everything depends on what happens to Big Head. The next few minutes will tell."

"I think Chartain got it." Burke pursed his lips. "I'm almost certain. He had it well in hand on the last transmission."

"The anti-missiles are homed in, everything in the arsenal," Rikeman snapped, "but with Big Head's defenses . . ." He cut the words off. Seconds later he was back again. "All right, we'll sweat it out."

He paused. "You're out of fuel?"

"Out of fuel and damned low on oxygen."

"I thought so. Here's the schedule . . . dependent upon what happens with Big Head."

"Certainly . . ."

"We'll try to compute a course for *Moth* to contact you the next turn around."

"Start of turn fifteen?"

"Turn sixteen," Rikeman corrected.

"And if you don't?"

"Then we'll most certainly be ready the following turn."

"If I last that long."

"You will. Conserve your oxygen. Don't make any unnecessary movements or get excited. Just relax and take it easy and depend on us."

Burke laughed harshly. "Sure, just relax. My little cabin in the sky."

"I know . . . I know," Rikeman responded, "but it's your only chance." The static field was rising, cutting into his words. The colonel was telling him everything would be all right—unless Big Head Three was loaded. His voice became fainter and finally vanished in the noise spectrum. Burke turned down the volume and looked at the chronometer, then glanced at the radiation counters. If Big Head blew . . .

The loneliness came abruptly, a loneliness such as he had never dreamed possible. It was a loneliness born of utter isolation, hopelessness, the knowledge of almost certain death—complete separation from the human kind. It wasn't the fact of death; he'd rather die under the bomb—die in the company of the human race. It was the solitude, the emptiness, the utter remoteness of his position. Fear. The beginning of panic, the face of the unknown looming large. He tried to tell himself he had it pretty easy, a lot easier than Rikeman and all the others who were staring down the ugly throat of a hydrogen bomb, waiting to see whether or not it blew. Yeah, easier, too, than the men who sat with fingers poised above the firing keys of the ICBM batteries; or the crews of the SAC bombers; or the thousands of men waiting at the bottoms of the seas in submarines—waiting to see whether or not the world blew itself apart.

He sat down and averted his eyes from the port. After a moment he buried his faceplate in his gloved hands and tried to quell the panic nibbling at his mind. A tremor came, shook his body and passed, and all at once he was sweating. But we've done it, he whispered fiercely. The bombs were disarmed, the mission completed. Chartain couldn't have failed; not that calm, certain, steadfast man. He had been like Trig: his own death had meant nothing in the face of the mission. Yes, Chartain had disarmed the bomb. Soon the *Moth* would come up and he would be on his way, gliding down to earth and safety. The *Moth* would come. The words rang hollowly in his mind. He was seized by another violent tremor.

"Damn you, Burke, don't break," he whispered. He waited until the tremor had subsided, then forced himself to action. First he taped all the salient facts of Chartain's death for automatic radio transmission, then turned his attention to the environmental instruments. The radiation counters read normal. Did that mean Big Head hadn't blown? The oxygen gage showed empty but the cabin air was fresh from the last refilling. Relative humidity and carbon dioxide readings were safe. If he were lucky ground would be able to plot *Moth's* course to get him at the start of turn sixteen. That would be—his eyes sought the chronometer—almost two hours. He could stretch it that long. If ground failed, the next chance would come ninety-six minutes later, about three and a half hours in all. If . . .

He forced himself to calculate calmly. When the cabin air was exhausted, he still had the portable tank on his suit—the last tank. He could abandon the *Argus* and live for a while in space, or even remain in the foul cabin using the air from the suit system. A half dozen of one and six of the other, he thought. But if he had to die, he'd rather die outside, in the clean cold emptiness of space. Somehow it seemed cleaner, more fitting. Satellite Burke! Maybe the saucers would track his body and he'd become another official moon of the earth. *Burke set at 8:20 p.m.* He grinned bleakly at the idea. After a while he returned to the port and waited, thinking of Laura—of what might have been. From time to time he glanced nervously at the radiation counters; the readings remained normal.

Turn fifteen . . .

Dawn below, somewhere over northeast Texas and headed for the Gulf of Mexico—give or take a few thousand miles, he thought grimly. He waited, his eyes immobile through the port. Land and cloud, land and water, fragments of the earth but never quite enough to piece together its geography. The radio remained quiet, ominously quiet. Had Big Head blown? Was he looking down on a dead world? But the radiation counters read normal. He had to believe that. He watched the chronometer tick off the minutes, calculated his passage over South America, waited for the radio to come to life. Its silence worried him. Once, far below, he saw splotches of the South Atlantic between great rifts of clouds; it appeared like blue-bottomed ravines on a sandy desert. The Antarctic Circle was coming up; within seconds he would climb up the opposite side of the world, cutting up through the Indian Ocean toward the Dutch East Indies.

A Navy tracker in the South Indian Ocean came in with a position check and receded in the noise spectrum almost before he could make out the garbled words, but he felt better. At least he knew where he was. Another thing, Big Head Three hadn't blown, or the tracker would have warned him. At least there would be no profit in giving a man's position check unless they expected to fire the *Moth* into orbit. That seemed logical. He hoped his reasoning was right. It had to be right . . . had to be right. The calm Chartain couldn't have failed. He watched the cloud-spattered ocean flee by and the dusk line march toward him. After a while he sat down and waited while the *Moth* climbed toward the coast of Manchuria, toward the Sea of Kamchatka—toward the enemy missile power. He tried to suppress the excitement he felt welling inside him. The radio crackled to life.

"The Moth is dead . . . The Moth is dead . . ."

The voice was different, different. The syrupy speaker had been replaced by a harsh, arrogant voice which seemed to hold a vindictive sneer. Burke looked at the chronometer and smiled grimly. That would be his friends at Severnaya Zemiya. Well, one thing they had proved—they didn't have an anti-satellite missile or they would have used it instead of propaganda. He squared his shoulders and spoke aloud, "To hell with them. Their brain wash stinks."

He watched and waited. Dawn was coming up again over the Northeast Pacific; dawn and turn sixteen, and the twenty-fourth hour would end. Sandlot—The Island—would be wheeling by somewhere beneath. Rikeman would be almost below him, chewing on a cigar, watching the *Argus* speed overhead; or, rather, watching the representation of it on an electronic scope. No matter, Rikeman would be there. He sucked his lip nervously until the radio abruptly chattered to life. He grabbed the mike and acknowledged even before the call was completed. Rikeman spoke confidently, "Big Head was a dud—we'll get you next turn. We're having a slight technical problem."

"So am I," Burke rasped sourly. "Did you ever try to live without oxygen?"

"We're doing our best. We feel confident that the *Moth* will be up on the next time around."

Burke regained his composure. Sure, Rikeman was trying, and it was no ball for him. He asked curiously, "What happened to Big Head?"

"Its anti-missiles didn't fire—Chartain fixed it for good."

"Then our missiles got it?"

"Right on the nose," Rikeman told him cheerfully.

"I didn't think we had any big anti-missiles covering that approach," Burke stated cautiously. "I was sweating that one out."

"We don't have . . ."

"Then how. . . ?"

Rikeman hesitated. "An advanced polaris-IV anti-missile missile, launched from the *Gulper,* one of the anti-missile subs. That was one the enemy hadn't banked on."

Burke whistled, then said soberly, "Trig would have liked that. He always maintained the Navy would pull us out of the hole."

"Yes, it takes weapons of all kinds," Rikeman admitted. He paused briefly. "Now about you . . ."

"I don't see that it matters much," Burke cut in bluntly. "The mission's completed."

"Don't fool yourself. The most important part remains . . . getting you down."

"Don't give me that sales talk."

"Listen," Rikeman snapped impatiently, "our whole space future depends upon our ability to get a man down from orbit. Human re-entry. None of the designs on the drawing board are worth a tinker's damn if we can't accomplish that. That's what we have to know, Burke, that we can bring a man down—alive. Bringing animals down in rockets using air brakes and chutes is one thing; but we have to know that the skip-glide principle is safe, reliable—can be used in large-scale operations. The knowledge is vital. If we can't get you down, we'll have to scrap our plans, start from scratch and figure some other method of stepping into space —and back again."

"I guess I wasn't thinking of that," Burke muttered slowly. "Of course, I can see that."

"Then just relax—and wait." The noise spectrum was rising.

"Of course," Burke repeated, speaking more to himself than to Rikeman. The colonel's voice faded and finally was lost altogether. He turned slowly toward the environmental instruments: carbon dioxide content one point two percent, relative humidity forty-five percent. Well, at least that was safe. Just take it easy, like Rikeman advised, he told himself. Play it cool. Don't make any unnecessary movements and don't fret. He laughed at the idea. Sure, play it like a TV hero. Sneer at death. That's the way they did it on the screen. He checked the radiation counters. Safe there, too. Higher up, above the five or six-hundred mile mark, there was a band of radiation that would have fried him in hours; and below him was a sea of radiation. But he was safe, sliding between them, like a slice of ham between two pieces of bread, he thought.

He returned his attention to the sweep of cloud below, thinking it was Rikeman's turn to sweat it out. He had sold the brass the idea that he could bring a man down from space—had his reputation on the fragile wings of the *Moth.* Now he had to produce. He pushed the thought aside and tried to concentrate on bits of information he had once picked up from Chartain. What had the doc said? The average man at rest breathes from twelve to fifteen times a minute with the tidal volume of air per breath around six hundred cubic centimeters. Fifteen times six hundred was nine thousand cubic centimeters per minute or about nine liters of air. But that was air, and air contained only about twenty percent oxygen; and only a small part taken into the lungs was used by the body. He wrestled with the problem for a while, then laughed mirthlessly. So what? There was only so much oxygen left. It would either last or it wouldn't; but at least he could try to keep his breathing to a minimum, the trick fakirs used to use when they had themselves buried in coffins for long periods of time. There was a lot about oxygen the Air Force had pounded into him but it wasn't clear now. His thoughts seemed muddled; and something was wrong. What was it? What had changed?

The silence, that was it. Something was different. He listened for a moment before he placed it—the low hum of the air circulation fan was stilled. Sure, he could tell now; the air was flat and stale, getting more humid. He tried to concentrate on keeping his respiration rate low but the harder he tried the faster he breathed. That was no good. Just forget all about the facts and figures and relax, he told himself. Take it easy; just ride along in your little cabin in the sky and wait for the *Moth.* After a while the radio chattered, filling the cabin with noise before the harsh sounds became formed into words:

"The Moth is dead . . . The Moth is dead . . . The Moth . . ."

He cursed and threw himself toward the radio, snapping it off so violently that for an instant he feared he had broken it. He stood there trembling, feeling his heart pound. Sweat stung his eyes and hung heavy on his body. Deliberately, then, he turned the radio back on.

"The Moth is dead . . ."

"Dead hell," he snarled. "Stick around and watch me ride it down. Watch me, damn you." He fell weakly into the seat. *Yeah, I'll ride it down and save Rikeman's precious reputation. I'll show 'em I can make it.* Later he looked at the chrono. Turn sixteen was nearly shot. He was concentrating on doing nothing when the radio came to life again. The call was repeated four or five times before he lethargically managed to acknowledge. When he finally did, Rikeman's voice fairly leaped from the speaker.

"We've got it set."

"Now . . . this turn?" Burke asked eagerly.

"Not quite." Rikeman hesitated. Burke held his breath, waiting apprehensively. "We'll have the *Moth* alongside at the start of turn eighteen."

Turn eighteen. The news hit him with a hard blow. His stomach tied into a tight knot and he felt a sudden nausea.

"If there is a *Moth,*" he gritted. He spat the words violently into the microphone.

"Burke!" The colonel's voice was imperative. "There IS a *Moth* and we WILL get it into orbit. I promise you it'll be alongside as quickly as possible. The next turn is the very best we could schedule," he said regretfully. Burke sagged back, fighting a wave of weariness.

"Yes, sir," he said tiredly.

"Just hold out."

"Yes sir," he repeated. He dropped the microphone and slumped back in the seat, feeling he really didn't care whether the *Moth* came or not. Why battle any longer? What was the use? *Spy Eye* was out of commission; the bombs were gelded—the mission completed. Why keep on? He struggled with the question, conscious that he was sweating profusely and his breath was fire in his lungs. There was a reason to fight, he thought, only he couldn't seem to remember what it was. It came back to him slowly—Rikeman had to prove that a man could re-enter the atmosphere from space and live. Yeah, Rikeman had to prove it, but he was the one who had to do it. Had to do it . . . had to do it . . . had to do it. The phrase ran through his mind. He tried to banish the words and concentrate on what he actually had to do—all the things he had to remember.

Turn eighteen. He had to hang on until turn eighteen—another ninety-six minutes and over twenty-seven hours since blastoff. Maybe Rikeman thinks a man can live on carbon dioxide, he thought. He giggled inanely before he managed to get control of himself. When he did, he sat back in the pilot's seat, weak and shaken and strangely lightheaded. He forced himself to look at the environmental instruments; the temperature stood at 82 degrees Fahrenheit, relative humidity at 60 percent, and carbon dioxide a little over three percent. He was reaching the critical point; he would have to watch that. He debated using the portable tank on his suit and finally discarded the idea. That was the final card—the ace that might see him through—the bridge over the last hour separating life from death.

He looked out the port again. A faintly familiar land mass sprawled out on one side puzzled him, and he tried to fit it into his mental geography. Madagascar, of course, he finally decided. That meant he was zooming over the Indian Ocean toward the Arabian Sea. He raised his eyes; the dusk line was racing toward him. It came fast, covering the earth, transforming the ball at his feet into a huge shrouded giant. Dusk and night, and the earth a formless mass beneath the glory of the heavens. Above and beyond and to both sides were stars. Big blazing stars, hot with fury yet strangely cold with distance. Strange, he ruminated, he had never noticed the fact that the stars were mainly colored—hot reds and oranges. arc-light blues, shimmering yellows and a few here and there that winked with violet eyes. The familiar constellations still rode the heavens, only they were productions done in technicolor. He slumped back in his seat and waited. wondering how many hours must pass before turn eighteen came up.

"The Moth is dead . . . The Moth is dead . . ."

He came to with a start. That voice! That damned voice again.

"The Moth is dead . . ."

The voice was mocking, laughing, sneering. *The Moth is dead . . .*

"No, damn you." He lurched drunkenly to a half-standing position and weakly grasped the microphone, holding it tightly against his lips.

"No! No!" he hoarsely denied.

"The Moth is dead . . ."

"No!" He screamed. He flung the microphone down and fell back into the seat. A vein throbbed in his neck—throbbed uncontrollably. Sweat beaded his body with a tickling, maddening sensation. He felt clammy, hot and cold by turns—all but his lungs. They burned, stung with each breath until he felt he could endure it no longer. How much could a man take? What did Rikeman expect? God, he wasn't superman. Rikeman didn't have the right to demand that he live, keep on living. He tried to look at the instruments, but his eyes were oddly out of focus. Controls, equipment—the entire cabin seemed to blur. The viewports wavered and danced, unaccountably changing shape.

This is the way death comes, he thought—a shadowland of blur and movement, of light and shadow, of dancing dials and trembling counters. The voice was right. As far as he was concerned, the *Moth* was dead . . . dead. Rikeman would be firing his rocket at a tomb, a satellite-casket. Or was it casket-satellite? He heard a choking, half-hysterical laugh and looked wildly around the cabin. No one there. His eyes got a vaguesly puzzled look. No, that had been him; the sound had come from his own throat.

He shook his head and tried to steady his thinking. The sting in his lungs had let up a little, replaced by a strange light-headedness, almost a feeling of well-being. Odd, the euphoric feeling was growing; the anxiety and panic were ebbing. He had won . . . won! A cautious inner voice told him to beware, and for a second he looked startled, trying to pinpoint the warning. Then he remembered. This was hypoxia—oxygen deficiency. But it didn't seem to matter. Why had they been so concerned about hypoxia during flight training? It felt fine . . . fine. He tried to fixate the oxygen gage. No good. The needle was a blurred double line that constantly receded from his line of sight. The instruments danced and wavered, their letters were haxy and indistinct.

Hypoxia! The significance of the information passing throught his mind suddenly struck him. He remembered now, recalled the information hammered into him during his flight training and continually thereafter. Hypoxia—insufficient oxygen—was ushered in on a feeling of well-being, even elation, a sensation of not caring—the very symptoms he was experiencing. And unconsciousness could follow quickly, without warning or awareness. He had to get out of there . . . had to get out. The panic came back with a flood. Panic and fear.

Get hold of yourself, he said savagely. Get out of here, Burke. Scram. Get out while you can. Eject . . . eject. He moved his hand to find the ejection handle and fumbled before he remembered. He couldn't eject—he wasn't in a plane. He had to pressurize his suit. His fingers fumbled with his faceplate for a moment before he manged to get it shut. He found the oxygen valve and turned it. The suit inflated against his body and fresh oxygen from the portable tank poured into his lungs. He breathed in the clean air, feeling his head clear. It was just as if he had awakened from a bad dream—what was it he was supposed to do? Yes, that's it, abandon ship. He automatically tested his heating elements, then struggled to open the hatch. No use, it wouldn't open. He braced his body and forced all his weight against the lock before it gave. The hatch opened with a blast, and he barely managed to keep from being whisked into space by the escaping air.

He clung to the side of the opening for a moment, struggling to think clearly. He knew there was something he had forgotten, some vital thing. The sled . . . the sled had power. Maybe he could ride it down to earth. That would surprise Rikeman all right. He'd land it right there on the strip at Sandlot while the colonel and all the top brass watched bugeyed. Yeah, he'd show 'em. He staggered back into the cabin and dragged the sled to the hatch, then positioned it and looked backward, wondering if there was anything else he had forgotten. He decided there wasn't and turned back, steadying his body against the open frame leading to space. It was, he thought, the doorway to the stars. He glanced upward. Reds and yellows and blues; big stars, small stars, bright stars, dim stars. The Big Dipper hung like a painting in the sky, naked and alone. Glorious, he thought, and stepped into space.

He struggled briefly with his sled before getting positioned properly. It was only then he realized that the act was unnecessary. His body and the sled, either together or separately, would travel in orbit with the *Argus*. Only there was something about having the sled fitted against him. It gave an odd sense of security. Off to one side the *Argus* blotted out the sky; below the earth was a pool of darkness. Somewhere down there was—what? He, Christopher Burke, a mote in space was hurtling around the earth in a damned bobsled, would come zooming down over the North Pacific. His thought blanked for a moment and he caught himself with a start. Had he dozed? No matter. He closed his mind again. Space was peaceful, peaceful. Yeah, that's what Trig had maintained. *Space was calm.* Good man, Trig. Trig and Chartain. Maybe he'd join them; make it a triumvirate. Maybe he'd . . .

He woke with a start. A voice inside his brain was calling him, calling him. He shook his head to clear it. That's right, someone was calling him.

"Captain . . . Captain. Come in Captain."

Someone was calling him!

I'm crazy, he though wildly. He threshed around on his sled. Space, space, the emptiness of infinity, vast and endless. He was alone . . . alone. He laughed hysterically.

"Captain Burke. Come in Captain. It's me . . . Jarhead."

Jarhead! He laughed inanely. Jarhead had escaped his Myrtle.

CHAPTER 14

"TAKE IT EASY, Captain, easy . . . easy."

The voice telling him to take it easy was persistent in his brain. Something or someone was tugging at his arm, talking, telling him everything was all right. He opened his eyes. Space, black space, and someone tugging at his sleeve. He shook his head.

"Easy does it Captain."

It was true. Someone, somehow, had found him, snatched him from the fields of empty space. He moved his head. A figure clad in a space suit was swimming alongside him in space. Beyond was a great needle pasted against the stars. Off to one side the *Argus* was a small dim shadow. He suddenly remembered the identity of the voice in his brain.

"Jardin!" He gasped the name with difficulty.

"Aye, sir." The answer rang through his phones and there was no mistaking the voice. It was like beautiful music, he thought. His vision was clearing, and he repeated the name, "Jardin."

"Right here, Captain, swimming alongside."

"Jardin," he repeated wonderingly, "how did you get here?"

"Came up on the *Moth*, sir. That's it just ahead." The missile sergeant moved around into Burke's field of view. "Preparing the *Moth* for descent is a two-man job so the colonel let me come."

"Oh, you beautiful Jarhead," Burke breathed.

"Well, not exactly beautiful," Jardin replied, modestly.

"Beautiful to me," Burke cried fervently. "You're about the last person I ever expected to see again."

"You didn't look like such a good bet yourself," the missile sergeant replied. "Boy, were you a needle in the haystack. It took some fancy orbit-plotting to get here. The old man had the computers working overtime. I was just lucky enough to wind up within radar range."

"Lucky for me," Burke agreed.

"Lucky for both of us,." Jardin corrected. "I can't get down without you. Which reminds me"—he hesitated—"I've got a message for you."

"Message?" Burke asked wonderingly.

"Yeah, from a young lady who wants a date with you."

"Laura!" Burke exclaimed.

"Right, sir, She told me to tell you she'd be waiting."

"Thank you," Burke said, almost humbly. For a little while his mind groped with the idea of Laura waiting, wanting him to come back. It was even a bigger incentive than Rikeman's reason. He gave Jardin a long look and finally said, "you're twice as wonderful."

"Thank you, sir." Jardin hesitated before continuing. "How are you feeling . . . now?"

"Okay," Burke replied honestly. "I feel like I've just come out of a good night's sleep."

Jardin emitted a sigh of relief. "Glad to hear that because we gotta start down . . . before long."

Down. Yes, they were going down, Burke thought. Down to the distant earth again; down into the air ocean. Nothing remained but to ride the *Moth* on the last long slant to the distant curving plane so far below. Nothing but to ride the *Moth*. He smiled grimly.

"Maybe we'd better get started," he suggested. He wondered just where they were but didn't ask, thinking he had time enough to worry about that.

"Sure thing." Jardin turned toward the slender needle floating off to one side of them and said:

"The plan is this. You drift here until I shuck the shell off that baby. Then I'll climb out and we'll swing the wings into position and lock 'em."

"Okay," Burke answered. "Sure you don't need any help?"

"Nope, that part's a cinch. Just drift easy." The missile sergeant measured the *Moth* with his eye, then swung his hand out in the opposite direction. Burke saw the weapon at the same instant it fired. Jardin's body was propelled slowly toward the distant needle; it seemed a long time before he reached the ship's metal hull. He watched while Jardin pulled his body into position and began crawling through the small access hatch. Although the ship was indistinct against the night, he followed Jardin's action with lively interest, mentally calculating what was to come. Jardin would close the outer hatch, then seal the canopy of the glider contained within the rocket's hull. After that he would fire the powder initiators. He waited, straining to see. After what seemed an interminable time, a line of blue flame flashed around the perimeter of the needle's longitudinal axis and the two halves of the *Moth's* shell flew apart. Burke watched the metal clam shells rotate, spinning into darkness in opposite directions leaving the real *Moth* new-born in space. It resembled its outer shell, only it was more slender, but with a strange blunted nose. A canopy at the top slid open and Jardin climbed laboriously out.

"Okay, Captain . . ."

Burke hesitated, then remembered he didn't have his hand weapon. He looked toward the *Moth.* The distance was too short to risk feeding power to the sled. Jardin guessed his predicament and said, "Toss your sled in the opposite direction."

"Of course, I wasn't thinking," Burke exclaimed. He drew a line of sight on the space vehicle, pulled the sled close to his chest, recalculated, and thrust it straight away from him with all the force he could muster. He watched it float away into the darkness without any sensation of reaction; but in short time he saw the *Moth* was visibly nearer. He would have passed over the top of the hatch if Jardin hadn't reached out and grabbed hold of his leg, clinging to the canopy opening with one hand while he hauled Burke down with the other. They clung together alongside the ship until Burke got oriented.

"I guess you know all about this critter," Jardin said after a moment. "We just slide the wings out and lock 'em into place."

"Yeah, so I was told," Burke remarked drily, thinking that the squat missile sergeant knew far more about the

Moth than he did. Jardin reached down into the cockpit and punched a button.

"That unlocks 'em," he told Burke. "The grips to pull the wings out are recessed near the tail. You take one side and I'll take the other."

"Check." Burke watched Jardin pull his body slowly toward the tail end of the ship. When he reached it, he beckoned for Burke to follow. Burke moved slowly, carefully, until he reached a point of the hull directly opposite his companion, then felt around until his hand encountered the grip.

"Ready," Burke said in the phones.

"Roger, let 'er come."

Burke tightened his hold on the handgrip and braced his body.

"Get set," Jardin warned. He waited several seconds. "Pull!"

Burke followed his command with a strong outward yank. The grip came free so easily that he was hurled backward and only his hold kept him from spinning into space. When he regained control of his body, he moved cautiously between the ship and the protruding edge of the wing which had come free of the shell and pushed outward. The wing emerged in an odd pleated design—a long, broad plane of metal extending into space. Burke worked his way slowly forward, pushing against the wing until it was fully extended, then locked it into place and climbed back atop the glider's hull and examined their work. The wings were things of beauty, he decided. Their great pleated sections had extended outward to form a large area surface of semi-sweptback desgn. Its leading edges were blunt to yield minimum heat at high-Mach numbers, yet the overall effect was of a slim sliver of silver. Slim but deceptively strong, he judged. Strong enough to withstand the terrible impact when the falling *Moth* hit the first tenuous traces of atmosphere. At least he hoped the wings were that strong. He ran his eyes over the *Moth's* body again. It seemed all but lost between the two large wing sections. He thought it looked more like a butterfly than a moth. Jardin had made his way forward to Burke's side.

"So far, so good," the missile sergeant grunted. He looked down into the narrow cockpit. "Guess I'd better squeeze in first."

Burke nodded, looking down into the cabin. The front pilot's seat faced an instrument panel remarkably clear of instruments, judging by military aircraft standards. Most of those present wouldn't operate until the *Moth* descended deep into the air ocean, where they would be powered by the ram air pressure generated by the ship's velocity. He swung his eyes. Behind the pilot's seat were two others, structured in tandem fashion. Three seats in all. Only Trig and Chartain wouldn't be returning. His mind shuddered away from the thought. Jardin squeezed through the canopy opening and slid into the second seat, then Burke lowered his body into the small space allotted the pilot. His cumbersome suit made it an extremely tight fit and he found difficulty in moving his arms. Jardin reached over his shoulder and closed and locked the canopy. Burke waited until he was finished and asked, "Ready for oxygen?"

"Aye, sir."

Burke opened the oxygen valve. When the compartment was pressurized, they released suit pressure and opened their faceplates. Burke gave a sigh of relief. It felt good to be sitting in a pilot's seat again, even if it was merely a glider. Merely. He smiled at the thought. The glider was designed to take more punishment than any aircraft that ever sundered the skies. It felt good—like returning home after a long absence. Familiarity, that was it, he decided. The *Argus* had never seemed familiar; but, somehow, the *Moth* felt like all the high-speed aircraft he had ever known. Even the tight cockpit felt good. Jardin suddenly put his feelings into words.

"Right back in the old groove, huh, Captain?"

Burke grinned. "Correct." He studied the instrument panel carefully. As he knew, the *Moth* was provided with three slender, electrically-powered flywheels which could be spun at right angles to each other and provide the power to both stabilize the *Moth* and get it into proper position for re-entry into the air ocean. The flywheels could be used to swing the vehicle left or right, revolve it around its longitudinal axis or move its nose up or down, the three degrees of movement necessary to assure proper re-entry angle. There were small push buttons, located on a panel similar to the arrangement in the *Argus,* which controlled the steering jets and forward jet tubes, the latter designed to help decelerate the *Argus* during its initial penetrations of the atmosphere. All in all it was essentially a glider. For the first time Burke gave silent thanks for the long months he had passed in glider school. He laughed, wryly, thinking that the Air Force had certainly planned a long time ahead. He studied the instrument panel a few moments longer, then spoke into his mike.

"Any idea of our location?"

"Somewhere on the *Moth's* second turn," Jardin replied.

Burke thought quickly. The *Moth,* he knew, was constructed along the simple principles first laid down by the Austrian, Sanger. It would fall, meet the atmosphere at a shallow angle and penetrate for a brief distance before skipping back into space—like a rock skipped across a pond. But during the first few penetrations of the atmosphere it would generate terrible heat and undergo tremendous g-loads; nor would it skip as far into space as its point of entry, for it would dissipate a little of its speed with each dip into the atmosphere. Thus, by a series of skips, it would penetrate progressively deeper into the air ocean while at the same time gradually slowing. The trick was to prevent excessive heating due to friction with the air and, at the same time, keep the shock of impact against the air within limits tolerable to both plane and occupants. According to calculations, it would take somewhere near half a turn from entry point into the air before the *Moth* reached sea level. At any rate, he would have to start his descent at around 33 south latitude along whatever longitudinal heading ground assigned. They might even come with landing range of Sandlot—if they were lucky! He conveyed his thoughts to Jardin. The missile sergeant listened carefully, then answered:

"All I know is that every piece of radar gear in the armed services will be tracking us. No sweat there, sir."

"No sweat," Burke agreed. He shifted his body to make himself more comfortable. "We'll just have to ride along until the next tracker picks us up."

"Fair enough," Jardin replied. "Personally I'm not overly anxious to hit that air. They tell me it gets hot."

"Not if we handle this baby right."

"You will, Captain, you will," Jardin remarked emphatically.

Burke returned his eyes to the earth. It was night below. They could be over Africa, Europe or most any place. He would know better when he caught sight of the dawn line. But even now the saucers would be sweeping the skies; SMEWS in the Arctic and Navy trackers over the oceans of the world. He half expected the radio to blare to life at any second. It would be good to hear earth again; hear Rikeman's voice—any voice. He tested the controls to get the feel of them and familiarized himself with the instruments. There was so much to learn, and so little time. After a while he saw the dawn line coming around.

Assured he was above friendly territory, he turned on the vehicle's radio transmitter, sending a continuous signal down through the ionosphere. Somewhere, below, the interferometer system would be monitoring him, measuring the *Moth's* transmitter signals by antennas arranged to permit determination of azimuth and elevation angles. Through the use of a number of such stations the *Moth's* velocity and position could be pin-pointed by triangulation. Other radars would be charting them by measuring the time it took signals to reach the *Moth* and return to the waiting saucers. No, there was no sweat. He couldn't lose now. Not if he kept air-loading and temperatures within tolerable limits. The clouds rifted and he saw the blue of ocean. A second later the radio crackled to life.

"Float Boy North-Pac calling *Moth.* Float Boy North-Pac calling *Moth* . . ."

The call was repeated several times before Burke managed a reply. The single word "Congratulations" came through the phones before the voice methodically began droning recovery directions. He concentrated on what the voice was saying until, finally, it receded into the static field. When the silence came again, Jardin spoke.

"Seems like we go around again." There was a curious tone of relief in his words.

"Half-way, then start descending. We should land by the end of the full turn—with luck."

"I hope."

"We hope," Burke corrected soberly. He swung around and grinned. "My glider instructor told me this was the safest thing they ever put in the air."

"Yeah, but he never had one this high," Jardin snorted.

They fell silent. Burke watched the broad expanse of

Pacific wheel by beneath them. Their tremendous speed made it seem like a pond. In no time at all the tip of South America was fleeing by on one side, the Antarctic on the other; then the earth was clouding, became lost, and in time he saw the dusk line sweeping across the gray blanket that hid the world. He used the flywheels to position the *Moth* horizontal to the cloud-plane below, then waited. Zero minute came up and he pushed several small buttons in unison. Small jets aligned perpendicular to the earth's center of gravity blasted out against the stars, and the *Moth* began dropping out of orbit moving earthward.

CHAPTER 15

THE *Moth* was falling, falling, pulled by the tug of gravity —dropping earthward while maintaining its high forward velocity; the sum of its motions was carrying it toward the planet below in a long closing spiral, one that would require around twelve thousand miles before contact with the ground; or rather water, Burke thought grimly. If the eggheads were right; if the men behind the army of pencils hadn't erred. But it could be rough, rough—far worse than the beating he had experienced on the way up.

He nervously checked his equipment: harnessing tight, g-bladders ready for instant inflation, oxygen okay, intercom and radio in working order. He decided he was as ready as he ever would be and checked Jardin; the answer was an uncertain affirmative. The period of free fall seemed endless even though he was kept constantly busy. There was no sense of motion, no vibration, no indication at all of the slim ship's tremendous speed. Inside the cockpit was utter calm. All but Burke's heart. It thudded against his ribs with a strong dull beat and he sensed the tension like a weight tugging at his nerves, causing them to strum like taut wires singing under a burden of frost. Or was the singing in his ears? His body stung with sweat and heat and was heavy with fatigue; each movement seemed sluggish and unsure, adding to the worry he felt. Jardin spoke suddenly through the phones as if he sensed Burke's anxiety and wanted to reassure him:

"A cinch, huh, Captain?"

He forced a reply: "A breeze." Neverthelesss his companion's seeming calm allayed him and he felt the tension slowly ebb while he concentrated on his next move. The *Moth* had to strike the outer atmosphere at a shallow angle —shallow enough to skip it across the air mass while dissipating some of its high forward speed; but he could not allow it to penetrate so deep that heat generated by friction from its passage through air would burn it to a cinder. He had to slow the *Moth* relative to the increasing density of atmosphere, balancing speed against altitude. He waited, watching the chronometer, conscious that his heart was rapping out a strong rhythm.

At a precise instant in time he applied the first retrorockets and felt the faint sensation of weight as he did so. He fired them in short bursts at first, then more continuously, wondering if such a puny force could actually stem the *Moth's* tremendous speed to any appreciable extent. While he fired the rockets he prepared for step two, correcting the ship's attitude, the angle at which it would strike the first thickening molecules of air. The usual reference line was the horizon; but there was no suitable horizon in space, hence he had to rely on the ship's artificial horizon indicator. He quickly studied the instrument, moved his fingers to the flywheel stabilizers and punched a toggle switch.

An electric motor hummed to life and flywheel alpha began spinning, exerting a minute force which brought the glider's nose up with tantalizing slowness. He punched alpha to a stop and started flywheel beta, rolling the ship slightly around its longitudinal axis until the wings lay parallel with the horizon shown on the face of the instrument. He studied the drift meter, trying to establish motion lines on the dark clouds beneath in order to align the *Moth's* nose in the direction of flight. Finally he activated a third flywheel and pulled the nose slightly to the left. When he had finished, he studied the instrument and optical scope in turn and made several small corrections before he was satisfied with the *Moth's* re-entry attitude. If his calculations were right, it would hit the outer fringes of the atmosphere in a slightly nose-up attitude; if he were wrong, it could flame to its death, or be torn to shreds by the force of impact.

He checked and rechecked, occasionally glancing earthward. Night and cloud, a vast and formless universe in which the *Moth* was an audacious speck of matter, a firefly pitted against the blaze of the galaxy. He was momentarily struck by his own insignificance in the scheme of things and sensed a deep humility; but with it there was a sense of pride. He tried to ease his tension by keeping occupied with the task ahead. Down, down, falling toward the gigantic maw of midnight, hurtling toward it at meteoric speed, yet with no sense of motion except for the barely perceptible tugging of the retro-rockets acting against the *Moth's* slender frame. The dark blanket of cloud seemed to stretch to infinity—seemed near, near. He looked at the radar altimeter and caught his breath. Earth was a scant hundred miles below and coming up fast; they were already passing through the strata of lonely molecules, still vacuum-thin, but plunging fast toward the greater air mass. He rapidly checked his instruments, conscious of a constriction in his throat. His muscles were taut, ached, and his body felt like a coiled steel spring under full compression. He checked his personal equipment again and spoke into the mike:

"Get set."

"I'm set," Jardin replied tersely. Burke flicked his eyes over the instrument panel again, took a second look at the controls and looked earthward. The clouds seemed nearer, although he knew it must be an illusion. He looked up and his eyes caught the *Moth's* nose.

Pink! The *Moth's* blunt nose was a light pink, deepening, verging to a flame hue. He gave a startled look at the instrument panel and simultaneously applied directional thrust to slow the ship's drop before it penetrated too deeply. Small thermocouples imbedded in the nose and leading to the edges of the wings measured the heat, converted it into electrical current, showed it as heat readings again on the temperature gages. The space speed indicator, which correlated radar altimeter readings with nose temperature to show airspeed, indicated almost 18,500 miles per hour—about Mach 30 at altitude.

He caught his breath, fearful that the penetration into the air had been too deep—that the *Moth* wouldn't start outward again soon enough. The impression of weight gathered in his chest and a boom like distant thunder filled his ears. An instant later the *Moth* wrenched violently. His body was caught in a tortuous grip, his blood and guts hurled violently downward as some giant fist seemed to smash him against the seat. He struggled against the agony while one part of his mind screamed he had erred; he had gone too deep into the atmosphere—too deep, too fast. If the air was thick enough to react against the ship's hull with such force, it was thick enough to sear it like a flaming meteor. He tried to suppress the thought while he struggled against the weight pinning him downward, draining his brain of blood and dimming his vision.

"Captain . . . Captain . . ." Jardin's voice broke into his phones in a husky moan. He tried to answer, to reassure him—tried to tell him they had impacted against the air ocean; but he couldn't get the words out. Pain, a wracking pain, a tearing and rending as if his body were being torn to shreds. He tried to read the g-meter but his sight was failing. The temperature gages? He strained to read the dim letters through the growing fog. His head was whirling, senses whirling; the whole world was whirling like some giant pinwheel in a madman's carnival. The universe was spinning madly, like a top, like some fantastic centrifuge; spinning and growing smaller, shrinking. He was speeding down a black tunnel, rushing blindly through a polished black shaft; ahead, far in the distance, he saw a circle of light. It was spinning, growing smaller—became a point and vanished altogether. Blackness closed in and he passed out.

The night was endless, a night of chaotic dreams, a sequence of bizarre imagery in which he was back on the *Argus*, floating in space, disarming gigantic bombs—watching Trig die. He gasped and shuddered as the sled hurtled down, crashed the *Leech*, flamed. The scene vanished and Chartain's face looked at him out of the night, a monstrous face which filled the sky. Its expression was grave, sad; and the face faded. The mental imagery gave way to an awareness of torture, unendurable agony. He was pulled, pushed, torn, smashed until his body was a sopping mass of flesh. A voice came out of the darkness, a plaintive voice calling him from a vast distance. Why was it calling him? Who? Who? The voice grew louder, clearer, more insistent; it filled his head, resounded in his skull until it felt like a drum.

"Captain . . . Captain, please wake up." The words pulsed through his brain. *Please wake up.* He struggled to free himself of the blinding darkness; consciousness came with the feeling of someone tugging at his shoulder. Odd, someone always seemed to be tugging at his shoulder.

"Captain . . ."

He managed to pull his head erect and opened his eyes. The interior of the cockpit was a blur and the instrument gages were dancing faces. He fought to steady himself, aware that his body was a sea of agony and his head throbbed unmercifully. He said weakly:

"I'm all right."

"Thank God," Jardin half-whispered. "What happened?"

"Probably nothing that shouldn't have. We merely hit the top of the atmosphere and skipped off."

"It felt more like Mount Whitney," Jardin replied hoarsely.

"Our angle of descent was altered slightly," Burke explained slowly. "The result was that our body fluids and organs tended to keep moving in the original direction, like what happens in a centrifuge."

"No centrifuge was ever like that," Jardin flatly declared.

"I've got to admit that we took more g's than the book says we could tolerate, or else I'm a lot weaker than I thought," Burke admitted. "It was rough."

"Will that happen every time we touch down?" Jardin sounded frankly worried.

"Might . . . the first few times," Burke conceded. "What worries me is that I never had a chance to get the skin temperature readings. I'll bet they were lulus."

"Doesn't seem overly warm," Jardin ventured thoughtfully.

"No, it doesn't—but we've skipped back into space." Burke returned his eyes to the instrument panel, gratified to find that his vision had cleared. He was trying to calculate their position when the second blow hit.

Down, down while the temperature climbed toward the 800 degree mark. The radar altimeter showed 300,000 feet, the space speed indicator 18,000 miles per hour—about Mach 28, Burke calculated. The pressure was coming again, crushing him against his seat, smashing the air from his lungs and dimming his vision. He caught his breath and tried to tighten his stomach muscles while he tested the controls against the aerodynamic stream. He could no longer make out the temperature reading but his body felt hot, hot and sweaty at the same time as if he had been dunked into a tub of scalding water. He struggled to pull his head erect and strained to see the *Moth's* nose. Pink again. He managed to catch a fleeting approximation of the temperature gages. The nose was approaching the metal limit but the after parts of the fuselage still registered the sub-zero of space. The *Moth* was caught between extremes of temperature; but just now it was the nose heat that bothered him. He spun flywheel alpha, raised the nose, moved the stick and felt the ship respond; the pressure on his body increased and became almost unbearable.

"How much longer?" Jardin gasped.

"Not too long."

"You mean we'll be dead?"

Burke managed a dry laugh that sounded more like a cackle and said: "I hope not."

He tried to read the g-meter. It looked like six g's but he couldn't be sure. He managed to focus his eyes on the temperature gage and was relieved to find the needle dropping; but again he wasn't certain. While he watched, the face of the gage seemed to split into two parts, both dancing and blurred. The pressure eased as suddenly as it had come and he slumped back in his seat, feeling shot. After a moment Jardin croaked:

"A dinger, wasn't it?"

"Amen." Burke struggled to raise his head and look at the earth. According to the chronometer, they should be cutting toward the Arctic Circle, would come down over the North Pacific. He worried about whether they were dissipating speed fast enough; or too fast? Far below the hostile saucers of Severnaya Zemiya would be charting their course, perhaps feeding data to the anti-missile batteries. Maybe rockets already were flaming skyward, rushing to intercept the *Moth.* He bit his lip and thought: To hell with them. He'd come through too much to worry about anti-missiles now. Jardin's voice broke into his ears:

"Here we go again!"

The weight and temperature came but not as bad as the first times. The nose of the *Moth* pinkened, the temperature rose and almost as quickly seemed to lighten again, leaving Burke clinging weakly to the stick, wondering if he had the strength to ride through the blows to come. He became aware that Jardin was ominously silent. He spoke into the mike:

"Jardin. . . ?"

There was no answer. He fought down an instant of panic while he scanned his instruments; the sergeant had oxygen and the temperature was tolerable. The worst that could have happened was that he had passed out, knocked unconscious by the repeated g-forces shoving blood toward his legs and draining his brain. While he studied the instruments the *Moth* dipped into the atmosphere again. The radar altimeter showed 250,000 feet and the nose temperature climbed to a high twelve hundred degrees—speed at an appalling Mach 27. Seventeen thousand miles per hour, Burke thought frantically. They weren't losing speed fast enough; the thick reaches of the air were coming up. He looked down: cloud and mist and splotches of dark that looked like tremendous caverns in the ground.

The impacts against the air ocean came quicker—short, hard sledgehammer blows against the *Moth's* fragile body. After a while Burke seemed in a constant daze, half aware that he was in danger of passing out. He fought to retain consciousness. He had visual flashes, incoherent moments and periods of stark clarity, as if his mind were responding to an on-off switch. At 200,000 feet the thickening air raised the nose temperature near a perilous fifteen hundred degrees Fahrenheit with speed at 14,000 miles per hour. Burke worked the controls in a daze, bothered by the constant weight tugging at his chest. At 150,000 feet they had dropped to a mere fifty-five hundred miles per hour with the nose temperature crowding the needle at slightly over 1,000 degress.

After a while he realized the *Moth* wasn't skipping any longer—was boring steadily through the atmosphere. His head began to clear and his eyes regained focus. There was daylight below, and the ocean sparkling between canyons in the clouds, white clouds and the scattered blue of the North Pacific.

"Made it," he whispered fiercely, "made it." Sight of the water gave him renewed strength. He forgot the speed, forgot the heat, saw only the blue ocean beneath. The retro-rockets had long since exhausted their fuel; now it was up to the air brakes. He manipulated the controls carefully, gaging air drag against temperature. He worked slowly, deliberately, holding the *Moth's* nose high, dropping it, changing the craft's attitude to keep the forces leashed against it under control. By 100,000 feet the *Moth* had dropped to seventeen hundred miles per hour—Mach 2.5—with the nose temperature at a safe five hundred degrees. He breathed easy for the first time and cautiously moved the stick and applied left rudder, noting that he was only moments from the time schedule assigned for the maneuver. With luck they would hit right down the alley, he thought. He remembered Jardin's silence again and quickly sobered. He called him several times without answer. He's taking a beating, Burke told himself. Still, it couldn't be helped. He was only lucky to have hung on himself. He looked earthward again, relieved to find the ocean almost clear of clouds. He kept the *Moth* in a slightly nose-up attitude, then noted for the first time that the conventional instruments which operated by ram air pressure were working; and they were dropping fast. He grinned with satisfaction. He was studying the sea when Jardin gave a moan and said weakly:

"Lord, I'm dead."

Burke chuckled. "Not quite."

"I'm dead," Jardin insisted. After a moment he asked: "What happened?"

"You passed out—just like I did on the first bounce. But don't feel bad. According to the medical records, we should both be dead."

"I am dead," Jardin said flatly. "I'll never walk again."

"You'll feel better in a minute," Burke promised. He shifted his head sideways and looked downward. The ocean was a vast blue-green plane, the horizon a shallow curve against the ebony of space. Incongruously, he saw stars. He suddenly thought of the radio; it was ominously silent. Had they gone off course? He felt a touch of worry and quickly dismissed it. The Navy trackers covered the sea; there was no worry on that score. A dozen saucers probably had charted their re-entry—pin-pointed the spot where they would touch down. He returned his eyes to the ocean. There was nothing but blue-green water for as far as he could see, no visible evidence of any help.

"Look sharp," he ordered Jardin.

"Eyes peeled. Man, even a rowboat would look good now."

Burke grunted and continued watching. Nothing, nothing. Wait, he did see something, just below the southern horizon. He focused his eyes, trying to pinpoint the spot—a thin slash of white against the ocean's edge. A moment later he caught sight of a second white ribbon to the left of the first. The wakes of ships, he thought. He rested his eyes a few seconds and then tried to discern the ships themselves, but failed. The distance was too great: only the wakes were visible, appearing like the streaks of silver on the sea when the moon leaves its trail. He moved his eyes to the optical sight. They would pass almost directly over the southern wake; he'd be high, but just the fact the Navy was there gave him comfort. Jardin spoke sharply;

"Captain, what's that ahead . . . just to the right?"

"Where?"

"Below—ahead, to the right?"

Burke swung his eyes in the direction indicated. Sea, nothing but sea. Then he saw it, a white wake. He looked more closely. It didn't look exactly like a ship; it seemed too long, too slim. He was staring at it when his radio crackled to life:

"DE 1257 calling *Moth.* DE 1257 calling *Moth.* Come in, *Moth.*"

Destroyer escort, Burke thought elatedly. That accounted for the needle-like profile. He said crisply: "*Moth* to DE 1257. I read you."

"Stand by to take evasive action," the voice snapped abruptly. "Steer to port and watch for a box."

"Roger." Burke looked downward while he moved the stick and applied left rudder. The resulting g-force threw his body against the side of the cockpit and he heard Jardin gasp. The *Moth* swung to the left and the white wakes began falling to the rear. He threw a fast look at the instrument panel. His speed had falled to slightly below four hundred miles per hour with an altitude of fifty-one thousand feet. Well, no box would ever reach them there. DE 1257 was unnecessarily worried, he decided. If there was a box, there was no cause for alarm. Nevertheless he kept alert, scanning the sea in all directions. More wakes came up and he brought his heading back to the original course. He was moving down faster now, sliding over the white wakes. He studied them. Destroyers, greyhounds of the sea, slicing through the water at better than thirty knots; missile-armed babies designed to fight in three dimensions. Any box better steer clear, he thought. The wakes became great arcs against the blue as the destroyers came about and raced toward the point where he would touch down. Only he was out-stripping them—fast. They fell away to his stern and disappeared over the horizon. Seconds later he spotted another wake.

"The ocean's alive with ships, just like I said." There was satisfaction in Jardin's voice.

"Good old Navy." Burke returned his eyes to the instrument panel. They were below four hundred miles per hour at forty-seven thousand feet. He studied the *Moth's* great wings, thinking they were far stronger than they appeared.

"Captain!" Jardin shouted at him and punched his shoulder at the same time. "Look down there!" His startled exclamation brought Burke up sharply. He looked in the direction Jardin was pointing and felt his heart leap. An ominous gray cigar was plastered against the sea. Friend? Enemy? His hand tensed on the controls.

"Look sharp," he snapped, "they may have launched a box."

"What a time for this to happen," Jardin moaned. "I was better off with Myrtle."

Burke didn't reply. He was busy searching the sky. Off to one side he saw another wake, then out of the corner of his eye he caught vapor trails churning up from the sea. He looked puzzled for an instant before he moved the stick sharply and simultaneously applied left rudder; the *Moth* shuddered and its wings quivered violently. He heard Jardin gasp. A split second later rockets flashed through the path they had just abandoned, leaving curious wakes in the air. He gave a silent prayer of thanks they weren't of the homing variety while he scanned the sea for their source.

"Keep a sharp eye," he snapped. "They must have come from a sub."

"Will do," Jardin fervently responded.

Burke pushed a button to jettison the empty fuel tanks and the *Moth* seemed to bound upward. He traded on convectional currents to maintain altitude while he kept the glider on a zig-zag course toward the southern horizon. Miraculously the last of the wakes slid over the horizon and the ocean seemed clear again—vast and empty. He watched, silently, half-expecting the radio to come to life, half expecting another barrage of rocket fire from the empty wastes below.

"Sure a lot of ocean," Jardin finally commented. There was a note of worry in his voice. Burke didn't answer but he was thinking the same thing. He swept his eyes over the sea. It seemed unbroken, lifeless—drawing nearer as the *Moth* slowly lost altitude. Once or twice he considered getting on the radio but as quickly dismissed the thought. Silence seemed to be the watchword of the day. He glanced at the instrument panel, startled to see they were down to eight thousand feet. He looked up just in time to see a box. It was below him, to the right, climbing on an intercept course. He couldn't mistake that square shape—the deadly bumble bee design. Jardin spotted it at the same instant and shouted an alarm.

"I see it," Burke gritted. He moved the stick and applied hard right rudder and the *Moth's* nose came around in a tight bank; the box shot under them and vanished. Burke was thankful they had dissipated their great speed. *Moth's* body shook under the maneuver but he felt certain it could take it. He became aware of a roaring in his ears. The wind. The familiar wind, he thought and felt a moment of elation. For an instant he forgot he was in deadly combat, forgot the box, forgot everything but the wind roaring past.

"Look out!" Jardin shouted.

Burke turned to the other side and saw the box coming around, preparing for another pass. He smiled grimly, thinking it wasn't built for the tight kind of turns the *Moth* could make. He went into another turn just as something whizzed past the canopy. Rockets! Damn, they'd almost got him. Must be another sub—or another box, he thought. He straightened the *Moth's* nose and scanned the sea and sky without losing track of box-number-one. Then he saw it, another submarine silhouetted against the water. But where was the box? He scanned both sides of his flight path before he saw it, off to the left, coming around in a bank; only it had gained altitude and was still climbing. Next pass would be made in a dive—swift lightning compared to the *Moth's* slow glide. He looked seaward. Wakes—two wakes far ahead to the front-left. He moved the controls and pointed the *Moth's* nose in that direction while trying to keep an eye on the box. It finally leveled off, came around and started its dive, fast and shallow. A picture of his first experience with a box flashed through Burke's mind, when the cool, hard-faced major had performed miracles with the camair. Burke remembered wishing he had been at the controls. Well, he was at the controls, in exactly the same situation. Except he had a glider. He hoped he could do as well as the major. He concentrated on the box. It was coming in fast—square and ominous and deadly.

He tensed, his hand steady on the stick, trying to gauge the exact instant to throw the *Moth* into another bank. Not too soon, not too late. He watched, feeling an odd elation. There . . . now. He moved the stick and rudder pedals and the *Moth* came around, trembling in the wind. He heard a whistling—the wind?—heard Jardin gasp in the phones, saw vapor trails boring through the skies toward them. A sudden blow staggered the *Moth* and it felt as if it had halted in mid-air. He swung his head around. The glider was yawing wildly and its left wing ended in a jagged tear. Something whistled past leaving a trail of yellow smoke—two, three trails; but *Moth* had had it, was plunging seaward.

Didn't do as well as the major, Burke thought grimly. He held the stick back to keep the *Moth's* nose up. His heart was hammering against his rib cage and he felt a moment of fear and exhilaration, oddly mixed. He forced himself to work calmly, methodically, and finally managed to hold the glider in a slow falling-leaf drop. The box—he'd be a dead pigeon on the next pass!

All at once the sky was filled with puffs of black smoke and he heard Jardin's sharp ejaculation. He twisted around in time to see a plume of smoke stretching toward the sea. It took him an instant to realize it was the box—the box had been shot down. He saw the destroyer at almost the same instant. Smoke rose from its deck and he caught the familiar sight of rocket trails stretching into the north, where they had last seen the submarine. Three gray shadows flashed by—Navy fighter planes, he guessed—then another barrage of rockets seared the sky. The sub was a dead duck, he thought. A spotting plane had sighted it; now the rockets were in the sky. If the sub dived they would follow it right into the sea, like miniature torpedoes.

He returned his attention to the controls. *Moth* was yawing, pitching, trying to tear itself to pieces; the sea was moving up fast. He fought the controls, trying to hold its nose up, trying to cushion its fall.

"Hold tight," Burke rasped. The *Moth* started slipping off to one side and he fought to regain control. The wind was a storm, now, buffeting the frail craft unmercifully. It yawed and pitched, rolled and vibrated, all at the same time until Burke feared it would shake apart; the nose dropped and it started sharply downward. The sea rushed up to meet them. He punched another button and there was a sharp jolt as the spin chute flared out: it pulled the *Moth's* tail down and abruptly slowed their fall scant feet above the ocean. An instant later it smacked belly down against the waves cracking Burke's head against the instrument panel.

"Get out," he managed to croak. He was dizzy and the world spun around him. Someone tugging again; he realized his faceplate was shut and he was struggling in the water with his suit inflated. He stopped fighting, remembering the suit would float him. Water slopped over his faceplate and brought an instant of panic; he thought of Jardin and flailed around trying to locate him. No use, the water had blurred his vision. Suddenly he felt Jardin's arm. The sergeant maneuvered until his faceplate was next to Burke's and gave a broad grin, then released his hold and floated on his back, apparently content with being down again. Burke grinned with relief, then caught sight of a destroyer from the corner of his eye. His grin became a happy smile. Jardin would see his Myrtle again—and he his Laura. He was still smiling when the motor launch pulled alongside.

BOMBS IN ORBIT

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